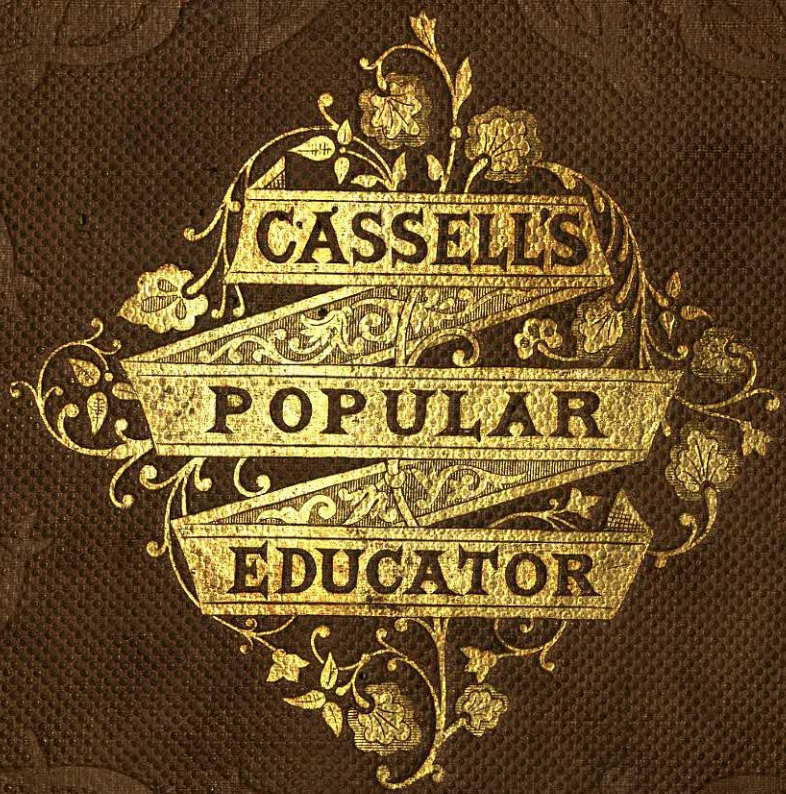
CASSELL'S
POPULAR
EDUCATOR

THE

Popular Educator.

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VOLUME THE THIRD.

STUDIES serve for delight, for ornament, and for ability. Their chief use for delight, is in privateness and retiring; for ornament, is in discourse; and for ability, is in the judgment and disposition of business: for expert men can execute, and perhaps judge of particulars, one by one; but the general counsels, and the plots and marshalling of affairs, come best from those that are learned. To spend too much time in studies, is sloth; to use them too much for ornament, is affectation; to make judgment wholly by their rules, is the humour of a scholar: they perfect nature, and are perfected by experience; for natural abilities are like natural plants, that need pruning by study; and studies themselves do give forth directions too much at large, except they be bounded in by experience.—*Bacon.*

NEW EDITION.

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TO OUR READERS.

LOOKING back upon our labours in the great cause of National Education, we cannot but congratulate our readers on the increasing evidence we have received, that the system which we have introduced has proved so eminently successful. By means of the re-issue of our POPULAR EDUCATOR alone, tens of thousands have been led to study a variety of useful branches of learning and knowledge, of which previously they had not the least idea; and, though entering upon these studies under the most disadvantageous circumstances, many have made a progress which not only surprises themselves, but astonishes and delights us, and encourages us to persevere in our exertions, confident that we shall continue to receive our reward. The subjects we intend to bring before our readers in the next volume of THE POPULAR EDUCATOR will include Chemistry and Natural Philosophy, together with Lessons in Italian. We trust and believe that in these departments of knowledge, the same success which has attended our past labours will accompany our future efforts, and that we shall have a very large number of diligent students, who, though they may not rival Newton or Davy, shall yet acquire such a proficiency in the Natural Sciences as must be of great and permanent advantage to them through life. The Mathematics and Languages will, of course, still form an important part of our series devoted to popular instruction; nor will Biography, nor articles on the cultivation of the mind, be omitted, when the proper opportunity occurs for introducing them. Geography, Instrumental Arithmetic, and various other subjects, begun in this Volume, will be continued in the next; but, whether our Lessons may relate to former or to new branches of knowledge, every means shall be employed to convey the greatest amount of information in the least possible amount of space, and in the shortest possible time; and we hope that our readers will give us credit for being the best judges of these necessary elements in the great work which we have undertaken.

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LESSONS IN GEOLOGY.—No. XXIX.

By Thomas W. Jenkyn, D.D., F.R.G.S., F.G.S., &c.

CHAPTER II.

THE ACTION OF WATER ON THE EARTH'S CRUST.

SECTION XIII.

ON THE DENUDING AGENCY OF THE OCEAN.

Denudation is a word in frequent use among geologists. It means the act of laying bare some rocks that had been formerly covered up, the removal of the overlying masses being affected by water. It is used for the agency of rivers in scooping out their own channels in the bed or beds of a rock. Its principal application is to the agency of the ocean and sea currents in wearing down, and removing, rocks that were beneath the waves.

Fig. 66.

The Denudation of Rocks in Saxon Switzerland.

In a former lesson, I intimated that the formation of valleys was a difficult problem in geology. It is evident that rivers, in general, have not excavated their own beds, but flow in valleys which have been formed, for the most part, by other agents. In the majority of instances, rivers are filling up, rather than excavating, their beds. In most longitudinal valleys, which form the bed of the principal river, there are frequently transverse valleys which run across them in such a way, that the water must have originally passed through them instead of excavating their present channels.

Depressions of land, called valleys, are not always easily accounted for. The diversity of their form would suggest a diversity of origin. Mountain valleys resemble large cracks produced in the strata of the earth's crust, either when contracting, or when suddenly elevated from the bed of the ocean. They are longitudinal, following the direction of the mountain chain; or they are transverse, running across that direction. Their sides are generally rugged, mostly steep, and their edges

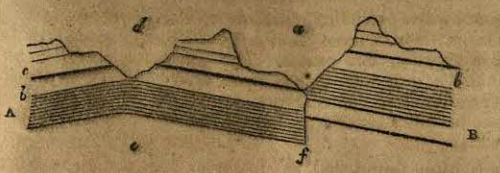
are crowned with lofty pinnacles. Ravines, gorges, and cleuchs, are bounded by more or less perpendicular walls of rock, and are due to the cutting power of running water, or to early rifts in the rock produced by some violent convulsion. Low-land valleys differ from both in being of a rounded form, as if a large body of water had passed over them, rounding their inequalities.

Accurate soundings have demonstrated that hill and dale, mountain and valley, exist now in the ocean, and must have existed in the crust of the earth from the earliest geological periods. Over many of these inequalities, sedimentary rocks have deen deposited, which have filled up and covered their numerous hollows and fissures.

In our early lessons on volcanic agency, your attention was directed to that violent disruption of strata, by which stratified beds have been in some instances contorted, and in others thrown up on their edges. It would depend on the force of the upheaving power, whether the beds of the earth's crust would be merely bent and curved, or whether large rents and fractures would be produced in them, which would be longitudinal and transverse fissures.

If you suppose this disruption of the crust of the earth to take place beneath the waters of an ocean, the sea would be greatly agitated, and would react upon the rocks, rushing into the cracks, sweeping around them, rounding off their angles, and accumulating detritus at the bottom of hollows. Should the land which was in this process of being elevated or cracked, be partly in the ocean, and partly above the surface of the waves, the reaction of the sea would operate chiefly on the lower portion of the upraised strata, and the abrasion and the excavation would present a rounded or curvilinear form. Had the elevated rock been already in the atmosphere, the modification of the original cracks in the crust would be affected only by such atmospheric agents as rain, frost, and heat.

Fig. 63.



Horizontal Beds, first cracked by Upheaval, and then laid bare by Denudation.

Fig. 63 represents the upheaving power acting against the beds of the crust A B. At *c* it has so swelled up the lower rocks as to produce at *d* a crack, which was probably very small at first. On this the currents and waves began to act immediately, until they denuded all the beds down to the bed *b*. When the same subterranean force acted on the crust at *f*, it produced a fissure or a fault throughout the whole of the beds, and tilted a part of them on their edges. The rupture thus produced at *a* would be widened and deepened by the denuding agency of the ocean.

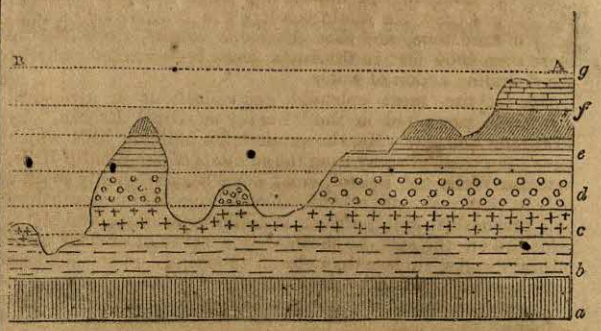
When this district would be raised to the elevation of several hundred or thousand feet, and appear as high plateaus, they would present the appearance of a wild and desolate landscape of broken and shattered hills, separated by deep and gloomy ravines, that speak distinctly of a period of convulsion, when upheaving fires from the abyss, and ocean currents above, had contended in sublime antagonism—the subterranean power slowly elevating the entire district, and the ocean grinding down the rocks and sweeping them away. As the region of this crust first presented its broad back over the waves, the upper surface consisted exclusively, from one extremity to the other, of a continuous tract, say of old red sandstone, though, ere the land fully emerged, the ocean currents of ages had swept it away, all except in the lower and last-raised beds, and in the detached localities where it still remains in pyramidal hills, to show the amazing depth to which it had once overlaid the inferior rocks.

To understand this, imagine a large district of land several scores of miles square, to have been, at an early epoch, covered with horizontal beds deposited by water, and that the present outline of the surface is like that represented in fig. 64.

While looking at this figure, you cannot doubt that at one time the beds *c d e f g* were as continuous as those of *a b*. If the section in this diagram were a brick wall, and if the series of beds were layers of different coloured bricks, and you found that, after some tremendous hurricane or earthquake, the wall presented the omissions and gaps that now appear, you would never infer that the wall had been originally built in this manner. You must apply the same method of reasoning to the aspect of these layers of rock.

What, then, has become of all the materials marked by the dotted lines from A to B? They have all been worn away and removed by the denuding power of the ocean. Suppose the thickness of each bed to be 200 feet, and the distance from A to B to be forty miles. Then, strata of 1,000 feet thick, and of many miles in extent, have been removed by denudation.

Fig. 64.

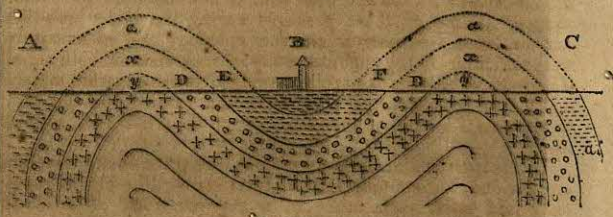


Horizontal Beds exposed by Denudation.

Its appearance now presents a broken surface of a country, with a series of hills, cliffs, valleys, and mountains in the landscape—one of the mountains rising to a height of 1,400 feet above the level of the sea.

Imagine, again, that instead of these beds being horizontal, they have been contorted by some powerful disturbing force from below, as is represented in fig. 65.

Fig. 65.



Contorted Beds removed by Denudation.

It is seen that, under the church at B, the beds are synclinal.* We are sure that the beds of *a x y* are continuous under B, for they all crop out at D and E. As their dip and their outcrop show that they are now continuous downward, the question arises whether they were once continuous and unbroken in the direction of the dotted lines between A and C? The regular position of these beds at A and at C, together with the amount of their curvature, prove that they were once continuous and unbroken upwards as well as downwards.

What, again, has become of all the materials of the rocks between A and C? The whole masses marked by the dotted

* Synclinical means having the same inclination, or rather inclining together.

lines have been removed by denudation. Sections in South Wales and Gloucestershire show that enormous beds of old red sandstone and mountain limestone, have been thus removed from the surface of the underlying rocks by the denuding action of sea currents.

In mountainous countries, these denudations are sometimes marked by rocks many thousand feet in height, which are separated from each other by intervals or valleys many miles, and even leagues in breadth. Of this there is a grand specimen on the north-west coast of Ross-shire, in Scotland. Those three stupendous mountains, Suil Veinn, Coul Beg, and Coul More, which consist of nearly horizontal strata of red sandstone repose on gneiss, the fundamental rock of the country.

These red sandstone mountains consist of an immense succession of thin layers, forming mere flags, with their surfaces distinctly ripple marked. They rise up at once, like pyramids, from the gneiss to the height of about 2000 feet, and to an average elevation of about 3000 feet above the level of the sea. It is impossible to look at these three high mountains, now rising in scattered and detached portions without inferring that, at one time, the whole country was covered with a great body of sandstone, and that enormous masses, from 1000 to more than 3000 feet in thickness, have been washed away by the denuding action of water.

One of the most splendid generalisations in geological science is presented in the "Survey of Great Britain," by Professor Ramsey. He shows that the missing beds which have been washed away from the summits of the Mendip Hills, between Wells and Bristol, must have been originally about a mile in thickness. In considerable districts of Monmouthshire and Breconshire on the west, and Gloucestershire and Herefordshire on the east, he shows that a series of ancient sedimentary rocks, no less than eleven thousand feet in thickness have been stripped off by denudation.

The stupendousness of this generalisation is in the two facts —that all these materials have been removed and transported to some other regions to compose rocks of a new formation; and that these paleozoic rocks are from twenty to thirty thousand feet thick. It is evident that whatever has been contributed to one area on the face of the globe, must have been derived and taken from another.

One of the most magnificent, and, at the same time, most clear and palpable specimens of denudation, is furnished by Saxon Switzerland, a district of Germany about ten miles beyond Dresden. The rock of the district is what the German geologists call *quadersandstein*, corresponding to the green sand formation of England. The rocks on each side of the river Elbe are cut in all directions into chasms, gorges, and passages, as if mechanical tools had been used to hew them into particular shapes. Some of these passages among the rocks look like narrow lanes,—so narrow are the openings and so smoothly perpendicular do the gigantic walls of rock rise on both sides. The walls of these rocks are cut vertically into separate masses by narrow passages, reaching from the summit to the very bottom, as if a cement that once united them had been washed away.

The perpendicular masses of these separate rocks or cliffs are divided horizontally into distinct layers, like blocks regularly laid upon each other in a massive work of artificial masonry. The terminations or perpendicular extremities of these masses or columns are very rarely sharp or angular, but are almost invariably well rounded, which is a clear proof of subaqueous action. Some of them appear as if two sugar-loaves were put together, the small end of one resting on the small end of the other.

From what is called the Bastei (on the right of the engraving, fig. 66), and 600 feet above the Elbe, the country looks as an amphitheatre, studded with lofty and rounded ranges of mountains. From the bosom of this amphitheatre, huge columnar hills start up at once from the ground, at a considerable distance from each other. All these are monuments of the denuding agency of water—not that of the present Elbe, but of the sea—at a time when this part of Germany was slowly rising from the ocean. The identity of structure and of composition in all these columnar eminences prove that they once formed one body, and that all the softer parts of their beds have been removed by denudation.

It is not to be supposed that what are called valleys of denudation have been produced by the streams which flow through them now. In many parts of the world there are valleys without any water at all running in them. It is obvious that these valleys are not the result of river action. England abounds with examples of these dry valleys, especially in the combes of chalk districts, and in the numerous depressions found in the slate districts of Devonshire. Even in Jamaica, where heavy tropical rains are frequent, there are valleys in which the waters are immediately swallowed up by subterraneous cavities or sink-holes. On the west coast of Peru, where rain never falls, there are remarkable instances of dry valleys, which much resemble the lowland valleys of Europe.

These dry valleys appear as if they had been scooped out by moving masses of water passing over them, and carrying off the materials which offered the least resistance. This denudation might have been effected by great disturbances beneath an ocean, such as would be caused either by the elevation of a long range of mountains from the sea, or by a disruption of the strata of which the crust of the earth in that region was composed. They were produced either by a marine earthquake, or they may have been formed beneath agitated waters, in which there were strong currents moving with great velocity. The rocks which were thus worn and denuded beneath such currents were afterwards protruded above the level of the sea.

The ocean abounds in currents strong and deep. Some of these currents are constant, some are periodical, and some are only occasional. These currents consist of immense bodies of water, moving with different velocities, and in streams of different breadths and depths. Of the character of these currents we have a well-known specimen in the Gulf Stream of the Atlantic Ocean. High winds and heavy gales greatly affect the velocity and the strength of these currents—sometimes diminishing their breadth and augmenting their velocity, and *vice versa*. The principal causes of all ocean currents are supposed to be certain prevalent winds—such as the trade winds, the monsoons, &c.

Among the periodical currents of the ocean we must place the tides. These have great power in scooping shallow banks, and in abrading our coasts. The general velocity of the tide is about a mile and a-half in an hour. When any obstacles are presented to its currents, its abrading and transporting power becomes much augmented, and the process of denudation takes place very rapidly and extensively.

It is often found that at greater or less distances from the shore, a great discoloration of the sea frequently takes place. This discoloration is produced by heavy gales and powerful hurricanes, and is due to the action of the sea on the rocks beneath, and not to the sands and mud which the ebbing tide brings with it.

Since strong winds are generally the causes of currents in the ocean, it is obvious that the ocean streams thus produced will not extend deeper than the depth to which the propelling power of the wind or gale extends. All hydrographers have demonstrated that the waters of the ocean vary in density according to their depth. A wind, then, sufficient to agitate and propel the surface water to a certain depth beneath, will reach a point below at which it can produce no change or movement, as all water beneath that depth would, as far as surface causes are concerned, be immoveable, and would consequently exert no denuding agency. Hence, the denuding power of ocean currents depends on the depth of the sea. The smaller the depth, the greater is their denuding power, and consequently the greatest amount of denudation has, in every geological era, taken place on shoals and near coasts.

Sea currents have always their greatest velocity and force in shallow water and in contracted channels. It is, therefore, in these situations that, among ancient rocks, we always discover the greatest effects of their denuding power. Their geological importance depends on two things: on the relative depth of the sea which they traverse, and on their proximity to land. By their shallowness, their velocity is increased; and by their nearness to coasts, they wear away and remove the rocks that resist them. At very great depths in the bed of the ocean we have no reason to suppose that this denuding power exists. If it does exist, its cause must differ from all surface influences.

LESSONS IN ENGLISH.—No. XLII.

By JOHN R. BEARD, D.D.

PART II.—INFLEXION.

NOUNS, THEIR ORIGIN AND CLASSES.

I HAVE given my scholars such instruction on the component elements of the English language as the occasion permits. You now see of what materials your mother tongue consists. In their origin, those materials are very diverse:—the Celtic, the Teutonic, the Norman-French, the Latin, the Greek, the Romance tongues—such as the French, the Italian, the Spanish—besides others, have all contributed a portion. Did I possess an unlimited command of space, I would here have entered into historical details, showing at what precise point of time the several elements entered our language. Some general idea on this head you will already have obtained; and for the present, at least, this must suffice. Our labours, then, have put us into possession of the constituent parts of the English tongue. These constituent parts we now possess in their simple and in their compound form, that is, we know whence our words come, and of what verbal combinations they are capable. But we do not yet know what changes these simple words, and these compound words undergo in themselves. Equally are we uninformed of the laws under which they combine together so as to form sentences and become the vehicle of thought. In other words, we have dealt with the Etymology of our tongue, and have now to treat of its inflexions and its Syntax.

All the words of the English language have been brought into nine or ten classes. Arranging these classes according to their importance. I find them to be: 1, the noun; 2, the verb; 3, the adjective; 4, the pronoun; 5, the adverb; 6, the preposition; 7, the conjunction; 8, the article; 9, the participle; 10, the interjection. If, however, I follow a more natural order, it may be better to treat of these classes in the following succession:—1, the noun; 2, the article; 3, the adjective; 4, the pronoun; 5, the preposition; 6, the verb; 7, the participle; 8, the adverb; 9, the conjunction; 10, the interjection. By this means we get together under one head the noun, and what chiefly pertains to the noun; and under another head the verb, and what chiefly pertains to the verb, as is seen in this arrangement:

Nominal Division.

1. NOUN, article, adjective, pronoun, preposition.

Verbal Division.

2. VERB, participle, adverb, conjunction, interjection.

The reasons of this division are obvious; for, 1st, the article limits the noun; the adjective qualifies the noun; the pronoun takes the place of the noun; the preposition governs the noun: and, 2nd, the participle belongs to the verb; the adverb qualifies the verb; the conjunction governs the verb; the interjection is an abbreviated form of a proposition.

Nouns or names are of a very high antiquity. In the noun probably is the root of language to be found. One of the earliest acts of human intelligence, must have been to give a name to some object of sight and desire. Accordingly we read in the Bible (Gen. ii. 20), that at the begining "Adam gave names to all cattle, and to the fowl of the air, and to every beast of the field." Food, of course, was man's first want; and a name for an edible object would be among man's first articulate sounds. That the noun preceded the verb is clear from the fact that men must have had a subject to speak of, before they could speak of a subject. In other terms, the subject was anterior to the predicate, for it is the business of the predicate to make some averment touching the subject. It is not easy to determine whether names of persons or names of things were first in order. If we reflect that food is more necessary to man than even companionship, we should be disposed to assign the precedence to names of things. But if, on the other hand, we bear in mind the fact that language implies companionship, and that words are called forth by the presence of another, then we find reason for thinking a personal designation, an appellative, or a word of address, took the lead of articulate sounds.

Nouns originally were imitations; they were imitations of natural sounds. From the first breeze of wind and the first ripple of water, natural sounds existed and must have drawn attention. Those sounds were signs, and those signs would be the names of the things signified. Man's tendency to make names imitative of natural sounds, bears in learned phrase the designation of onomatopeîa, from two Greek words, onoma (Latin, nomen), *a name*, and poièo, *I make*, so that the term literally signifies *name-making*, without any reference to the ground or principle of imitation on which such making proceeds. Instances of onomatopeîa exist in all languages. In English we speak of the *buzz* of the bee, the *mew* of the cat, the *crash* of falling timber, the *crushing* of a shell, &c. An English gentleman at a dinner table in China, was desirous, as he well might be, of knowing what was before him for his refreshment; but of Chinese he was ignorant. The dish on which his eyes were fixed had to him the appearance of hashed duck. Acting on this notion, he put to the servant interrogatively the words *quack, quack?* He was understood, and received for answer, *bow, wow*. After a similar manner, the nurse designates a cow as mistress *moo*, or a *moo-cow*; a lamb, she terms for her child's instruction, a *baa*, or a *baa-lamb*. Thus have arisen imitative terms which lead us to speak of the *quacking* of ducks, the *cackling* of geese, the *roaring* of the lion, the *neighing* or the *whinnying* of a horse, the *bellowing* of a bull, the *mewing* or *purring* of a cat, the *croaking* of frogs and ravens, the *cawing* of rooks, the *chattering* of magpies and monkeys, the *barking*, *yelping*, *howling*, *growling*, and *snarling* of dogs, the *clucking* of hens, the *bleating* of sheep and goats, the *twittering* of swallows, the *chirping* of crickets or sparrows, the *grunting* of pigs, and the *gobbling* of turkeys. Here too may be placed the names of several inarticulate sounds uttered by the human organs, as *laugh*, *cough* (both originally pronounced with a strong gutteral sound, or sound in the throat), *sob*, *sigh*, *moan*, *groan*, *scream*, *shriek*, *hiccough*, *yawn*. *snore*, *wheeze*, *sneeze*, *holloa*, *whoop*. The last appears in *hooping* (*whooping*) *cough*. From imitation arise classes of words which severally express the same general sound under modifications, e. g.,

clap	dab	clash	bang	tramp	drum
rap	dub	dash	ding	thump	hum
tap	bob	plash	dong	bump	whirr
snap	crack	splash	ring	plump	whizz
slap	clack	flash	twang	knell	buzz
whap	smack	smash	clang	bell	fizz
flap	thwack	slash	din	boom	hiss
pop	whack	swash	whine	bub	kiss

In general, names were originally descriptive. The fact is specially illustrated in the Hebrew nouns, and the book of Genesis is full of instances. Thus Isaac means laughter, and Jesus means saviour. The names of rivers in other languages, when traced back to their originals, are found to be descriptive of the flow of the stream, according as it is swift, slow, quiet, noisy, &c.

The name declares the qualities of the object; but, observe, there is no necessary connexion between the name and the qualities. Not always are names truly descriptive. With the progress of science even scientific names have ceased to be truly descriptive. But however correct a description of the qualities of an object its name may give, nevertheless it has no necessary connexion with the object itself. This fact is best illustrated by reference to the different names borne by the same object in different languages. Take the name God. In Hebrew, God is called Elohim and Jehovah; in Greek, Theos; in Latin, Deus; in French, Dieu; in English, God. You see there is no essential connexion between the Almighty and any one of these names. Yet the names are all descriptive. These names, and all names, are only sounds; or if you regard them as written rather than as spoken, then are they certain straight and curved strokes or lines representing sounds. By one sound is the Creator designated in Hebrew, by another sound he is designated in English. Hence you may learn that any sound may denote any object. The appropriation of sounds to particular objects is purely a matter of convention, or passive agreement. Take any familiar term, and you will see an exemplification. The term "Crystal Palace," pronounced by one pair of lips, speedily spread over the nation, and within a twelvemonth became a part of the English language. Any other suitable combination of sounds, as its designation, might have become recognised in the same way.

"A rose by any other name would smell as sweet."

If usage can originate nouns, usage can erect into nouns other parts of speech. Indeed, all the parts of speech may be regarded and used as nouns. You may know that a word not a noun is used as a noun, by its being constructed as a noun; that is, by its having connected with it such particles as nouns commonly take. Now, nouns take before them the articles, *the* and *a*; and they

have after them the preposition *of*. Consequently those words are nouns which have *the* or *a* before them, and *of* after them. Attend to these instances of

WORDS USED AS NOUNS.

1. Adjectives used as nouns: "*The blacks of* Africa are bought and sold."—"*The* Ancient *of* Days did sit" (Dan. vii. 9).—"Of the ancients." (*Swift*).

2. Pronouns used as nouns: "The nameless *He* whose nod is nature's birth." (*Young*).—"I was wont to load my *she* with knacks." (*Shakspeare*).—"When I see many *its* in a page, I always tremble for the writer." (*Cobbett*).—"Let those two try to do this with their *whos* and their *whiches*." (*Spectator*).

3. Verbs used as nouns: "The officer erred in granting a permit."—"*A may be* of mercy is sufficient." (*Bridge*).—"To err is human, to forgive divine." (*Pope*).

4. Participles used as nouns: "Neither regardeth he the crying of the driver." (*Job.* xxxix. 7).—"Reading, writing and cyphering are necessary parts of education."—"Knowledge of the past comes next." (*Harris*).—"I am my beloved's." (*Sol. Songs*, vii. 10).

5. Adverbs used as nouns: "One long *now*."—"In these cases we examine the *why*, the *what*, and the *how* of things."—"'Tis Heaven itself that points out an *hereafter*." (*Addison*).

6. Conjunctions used as nouns: "None of your *ifs*." (*Shakspeare*).—"Your *if* is the only peacemaker; much virtue lies in an *if*." (*Shakspeare*).

7. Interjections used as nouns: "Will cuts him short with a *What then?*" (*Addison*).—"With *hark* and *whoop* and wild *halloo*." (*Scott*).

8. Other words used as nouns: "*Us* is a personal pronoun." (*Murray*).—"I and J were formerly expressed by the same character, as were U and V." (*Allen*).—"*Th* has two sounds." (*Murray*).—"Let B. be a *now* or instant." (*Harris*).—"Within this wooden O." (*Shakspeare*). "Here are eight *ands* in one sentence." (*Blair*).

From the study of these instances you will learn the grounds of the rule given by Campbell, in his Rhetoric, "All words and signs taken technically (that is, independent of their meaning, and merely as things spoken of) are nouns; or rather are things read and construed (constructed) as nouns; as, 'For this reason I prefer *contemporary* to *cotemporary*.' You will also see that adjectives, when they represent more than one, take *s* in the plural, as if they were nouns; e. g., the ancients, the elders. Yet we do not say the wises, but the wise. The reason seems to be, that elder and ancient, though adjectives in form and import originally, have come to have a permanent force as nouns; as is seen in the fact that you can say "an ancient," "an elder;" but you cannot say "a wise;" "a sage," you can say, though, *sage* and *wise* are nearly the same in meaning, and though properly they are both adjectives. These remarks illustrate the extent to which usage prevails in language, and show that in a living language so rich as the English, rules to which no exception can be given are not easily laid down.

In the French language adjectives are used as nouns much more than in English. A slavish adherence to the French idiom in this particular on the part of ignorant translators, has led to the introduction of words for which no sufficient authority can be found. *Les religieux* is a French designation of monks and nuns. This has been literally rendered into "the religious," a phrase which in English, if it means anything, does not mean what is meant by its Gallic original. That word *original* is an instance of an adjective, which, while it retains the force of an adjective, has acquired the quality and the rights of a noun. Accordingly we can say "this original," "that original," "the originals,"—but only in certain peculiar significations. In such a case as this it is dangerous to yield to analogy, and usage must be rigidly followed. Even usage, however, is not to be obeyed, if it is not present usage, or has not the popular sanction. Consequently, the following from Steele (one of the writers in the *Spectator*) is not to be imitated—"For such impertinents;" "He is an ignorant in it."

With the aid of the logical terms, abstract and concrete, two other divisions of nouns are formed. *Qualities* may be considered under two aspects. They may be considered as belonging to some subject, as *white* paper; or they may be considered as altogether detached from any subject, as *whiteness*. In the former we regard the quality in question as *concrete*, in the latter as *abstract*. Hence *whiteness* is an *abstract* noun. Abstract nouns are numerous in English, being readily formed from their respective concrete adjectives by certain terminations, as black, *blackness*; pure, *purity*.

If regard is had to the origin of nouns, we may be led to recognise another class, namely, *verbal* nouns. *Verbal* nouns are such as are formed from verbs; e. g., "If the blood of bulls sanctifieth to the *purifying* of the flesh." (Heb. ix. 13). Here *purifying* is a noun derived from the verb *to purify*. The addition of the syllable *ing*, or the employment of the *present participle* as a noun, is a very prolific source of nouns. But observe, when a noun is thus formed, it has the *attributes* because it performs the *functions* of a noun. Now a noun is connected with another noun, when the one is dependent on the other, by the preposition *of*. Thus we say, "the *purification* of the temple." In the same way we ought to say the *purifying* of the temple. But inaccurate writers, while they use verbal nouns as nouns, allow them to retain their qualities as participles or parts of verbs, and deprive them of their rights as nouns; omitting the connecting of, and writing thus, "to the *purifying* the flesh;" "his *handling* the subject was good."

LESSONS IN GERMAN.—No. LXII.

Section LXXXIX.

Hin, (Sect. 28.) applied to time, may refer as well to the future, as to the past. Ex.: Bis zu dem zwanzigſten Jahrhundert hin können noch viele Umwälzungen in der alten Welt ſowohl, wie in der neuen, Statt finden; up to (between this and) the twentieth century (thither) there may yet, in the old world, as well as in the new, many revolutions take place. Mancher klagt nach einem leichtſinnig verlebten Jünglingsalter, daß nun die günſtigſte Zeit, um Kenntniſſe zu erwerben, hin ſei; many a one complains, after a frivolously spent youth, that (now) the most favourable period for acquiring knowledge is past (lost, or gone). In this latter sense dahin is likewise employed; as, die Ernte iſt vergangen, der Sommer iſt dahin; the harvest is gone, the summer is passed.

I. Einen Schritt thun = to take a step; as, welche Schritte müſſen gethan werden? What steps must be taken? Schritt halten = to keep step, to keep pace; as, dieſer Knabe verſucht, gleichen Schritt mit dem Vater zu halten; this boy tries to keep step with his (the) father. Heinrich iſt nicht fleißig genug, um gleichen Schritt mit Ernſt beim Erlernen der deutſchen Sprache halten zu können; Henry is not diligent enough (in order) to enable him to keep pace with Ernest in learning the German language.

II. Einen Schuß thun = to make a shot, to shoot; as, bis zu dieſem Tage hat kein Menſch einen ſo berühmten Schuß gethan, wie Wilhelm Tell; up to this day, has no man made so renowned a shot as William Tell.

Exercise 92.

Auftrag, *m.* order, direction;	Hader, *m.* quarrel, brawl:	Verfeh'len, to miss, fail;
Aus'beſſern, to mend, repair;	Legen, to lay; (ſich legen, to abate;)	Verſcheu'chen, to scare, frighten;
Beſchä'men, to shame, confound, confuse;	Maje'ſtät' *f.* majesty;	Verſor'ger *m* provider, sustainer;
	Pünktlich, punctual, punctually;	Vorbei'gehen, to pass one (unnoticed);
Binnen, within;	Schuß, *m.* shot;	Vorü'bergehen, to pass by;
Erfrie'ren, to freeze, chill;	Schwertſtreich, *m.* stroke with the sword;	Wehen, to blow;
Gnädig, gracious, clement;	Ueberge'ben, to surrender, deliver;	Wilddieb, *m* poacher, deer-stealer.

Wir lieben einen Menſchen nicht länger, als wir ihn achten;—iſt die Achtung hin, ſo iſt es auch die Liebe.	We honour a man no longer than we respect him—if (the) respect is gone, so also is (the) love.
Wer einmal den erſten Schritt zu einem Verbrech'en gethan' hat, thut auch leicht den zweiten.	He who has taken the first step to a crime, also easily takes the second.
Er hat einen guten Schuß gethan'.	He has made a good shot.
Er iſt ſoeben an dem Fenſter vorü'ber or vorbei' gegan'gen.	He has just passed by the window.
Er will nicht aus'gehen, weil der Wind ſo ſtark weht.	He will not go out, because the wind blows so hard (strong).
Wir werden wohl noch Schnee bekom'men.	We shall probably yet have (get) snow.
Es geht ein ſtarker Wind.	There is a strong wind blowing.
Von wem iſt die Rede?	Of whom is the speech (conversation?)

1. Die beiden Freunde waren es (Sect. 36. VI.) müde, länger mit einander zu streiten. 2. Der König und die Kaiserin, des langen Haders müde, sie machten endlich Friede. (Bürger.) 3. Da der Wind ziemlich stark und anhaltend wehte, so erblickten wir schon nach vierzehn Tagen Land. 4. Es weht heute ein sehr kalter Wind, und ich befürchte, daß wir Schnee bekommen werden. 5. Der Wind hat sich seit Mittag sehr gelegt; er geht seit diesen Nachmittag bei weitem nicht mehr so stark, als diesen Vormittag. 6. Es ging eine so kalte und schneidende Luft, daß er sich binnen fünf Minuten beide Hände erfror. 7. Lebt mein Vater noch? 8. Ja, er lebt noch, aber unser junger Freund ist nicht mehr. 9. Wohl ihm, er ist hingegangen, wo kein Schnee mehr ist. 10. Er, der Versorger so vieler Armen, ist nicht mehr. 11. Wovon (Sect. 29.) lebt diese arme Familie? 12. Wovon wird gesprochen? 13. Von wem spricht man? 14. Das ist etwas, wovon Sie nichts verstehen. 15. Wovon ist die Rede? 16. Von wem haben Sie das gehört? 17. Von wem hast du dieses artige Geschenk erhalten? 18. Der Wilddieb schoß nach dem Jäger, allein die Kugel verfehlte ihr Ziel, und ehe er noch einen andern Schuß thun konnte, sank er selbst, getroffen von dem Blei des Jägers. 19. Ohne Schuß und Schwertstreich wurde die Festung übergeben. 20. Er that einige Schüsse in dem Garten, um die Vögel zu verscheuchen. 21. Der junge Engländer ging soeben an unserer Thüre vorüber. 22. Er ist an mir vorbei gegangen, ohne mich zu erblicken. 23. Dieser Mann hat die günstigste Zeit seines Lebens unbenützt verbeigehen lassen. 24. Als Friedrich der Große einen jungen Officier nach einer Schlacht sehr auszeichnete und öffentlich lobte, so antwortete dieser: „Ew. (§ 58. Note) Majestät beschämen mich durch diese Ehre." 25. Trag' Er (§ 57. 7.) mir diesen Brief auf die Post, Johann, und laß Er mir diese goldene Uhr ausbessern. 26. Ist Er schon bei dem Herrn Minister gewesen, und hat Er meine Aufträge pünktlich besorgt? 27. Ja, gnädiger Herr, ich habe sie ausgerichtet. 28. Ich habe heute keinen Schritt aus dem Hause gethan. 29. Obgleich ich den ersten Schritt zu einer Versöhnung gethan habe, so hält es ihm doch schwer, den zweiten zu thun. 30. In seinem sechzehnten Jahre that er den ersten Schritt in die Fremde. 31. Dieser junge Schüler sucht gleichen Schritt mit dem ältern zu halten.

1. You will keep pace with your brother if you are more industrious. 2. Go step by step, and thou wilt not miss thy aim. 3. From whom have you received this present? 4. Of what is it made? 5. By whom is it made? 6. Is my mother still alive? 7. Yes, she is still alive; but my father is no more. 8. Peace to him, he is gone, where troubles are no more. 9. It blows very roughly to-day, and therefore it is better to stay at home. 10. I think we shall have rain when the wind abates. 11. Do not go out, for the air is so very cutting, and I fear you may chill your hands. 12. As long as the wind is in the east, it will remain cold and dry. 13. Finally, tired of the long quarrel, I made peace with my friends.

Section XC.

The phrase "a friend of mine, a friend of his," &c., is given in German by „ein Freund von mir," a friend of me, or, einer meiner Freunde, one of my friends, &c. (§ 123. 8. *d.*) Ex.: Ein Freund von ihm segelte gestern nach Californien; a friend of his sailed yesterday for California. Einer meiner Freunde verheirathete sich vor einem Vierteljahre in Amerika; a friend of mine got married three months ago in America.

I. Auftragen with the accusative, signifies to put on (as colours), or serve up (as food); as, man hat aufgetragen; they have served up (the meal). With the dative, it means to commission, enjoin, instruct, &c.; as, er hat mir aufgetragen Ihnen zu sagen, daß er Sie morgen erwartet; he has instructed me to say, that he awaits, or expects you to-morrow.

II. Anrichten (literally, to make right, or ready for,) signifies to get in readiness; to prepare (as victuals;) so Unheil anrichten; to prepare, produce, do mischief. Ex.: Nachdem die Köchin die Speisen angerichtet hatte, trug sie dieselben auf; after the cook had prepared the food, she served it up. Der Geiz hat schon viel Unheil angerichtet; avarice has already produced much mischief.

III. Hinreichen, when transitive, signifies "to hand, to pass." Ex.: Er reichte dem Freunde das Buch hin; he handed (reached) his friend the book; when intransitive it means "to suffice, to be sufficient." Ex.; Sehr wenig reicht hin, einen klugen Menschen glücklich zu machen; very little is sufficient to make a wise man happy.

Exercise 93.

An'richten, (See II.); Auf'tragen, (See I.); Beſtre'ben, to endeavour, strive, exert one's self; Despo'tiſch, despotic, despotical; Donau, *f.* Danube; Erdul'den, to suffer, endure, bear; Ertrin'ken, to drown; Grüßen, to greet, salute; Hin'reichen, (See III.); Suppe, *f.* soup; Va'terlandsfreund, *m.* patriot, friend of one's country; Verſu'chen, to try, taste; Verwir'rung, *f.* perplexity, confusion.

Einer seiner Freunde wurde in Baden erſchoſſ'en.	A friend of his was shot in Baden.
Man hat mir die Unterſu'chung dieſer Sache auf'getragen.	They have enjoined on me the investigation of this matter.
Man trug auf, was Küche und Kel'ler vermoch'te.	They served up what kitchen and cellar afforded.
Der Zorn richtet nur Böſes an.	Anger produces only mischief.
Es iſt in Deutſchland wohl'feiler leben, als in Ame'rika.	It is cheaper living in Germany, than in America.
Es genügt mir nicht, ihn zu ſehen, ich will ihn auch ſprechen.	It does not satisfy (suffice) me to see him; I wish to speak to him also.
Ich will es ihm hin'reichen.	I will reach it (forth) to him.
Ich wollte ihn bezahlen, aber das Geld reichte nicht hin.	I was going to pay him, but the money did not hold out (suffice.)
Er arbeitet mit großem Fleiße (ſehr fleißig).	He labours with great industry (very industriously.)
Er hat es mit Fleiß gethan.	He has done it (with intention) intentionally.

1. Ein Vaterlandsfreund ſtirbt lieber, als daß (Sect. 61.) er zum Verräther wird. 2. Die erſten Chriſten erduldeten lieber die härteſten Verfolgungen, als daß ſie ihren Glauben verließen. 3. So etwas läßt man ſich nicht zweimal ſagen. 4. Einen meiner Brüder habe ich in drei Jahren nicht geſehen. 5. Ein Freund von mir iſt vor einigen Jahren bei Wien in der Donau ertrunken. 6. Es iſt gut reiſen (Sect. 42. IV.), wenn man Geld, und gut leben, wenn man keine Sorgen hat. 7. In einem freien Lande iſt beſſer leben, als in einem deſpotiſchen. 8. In Begleitung munterer Freunde iſt es angenehm zu reiſen. 9. Nur zu leicht vergißt der Menſch im Glücke, was er iſt. 10. Viele ausgezeichnete und edle Männer ſind vergeſſen worden. 11. Es darf dem Menſchen nicht genügen, zu wiſſen was recht iſt, ſondern er muß ſich auch beſtreben, recht zu thun. 12. Es genügt mir, zu wiſſen, daß ihr noch alle geſund ſeid. 13. Wie weniges reicht oft hin, einen Menſchen glücklich zu machen. 14. Er reichte ihm die Zeitung hin, nachdem er ſie ſelbſt geleſen hatte. 15. Dieſes reicht hin, ihn zufrieden zu ſtellen. 16. Der Koch richtet die Speiſen an. 17. Er hat dieſe kleine Verwirrung mit Fleiß angerichtet. 18. Die Köchin verſuchte (Sect. 87.) die Suppe, ehe ſie dieſelbe auftrug. 19. Man muß verſuchen, ob man ihm nicht noch helfen kann. 20. Verſuchen Sie einmal dieſen Wein, ob er ſüß genug iſt. 21. Er trug mir auf, Sie von ihm zu grüßen.

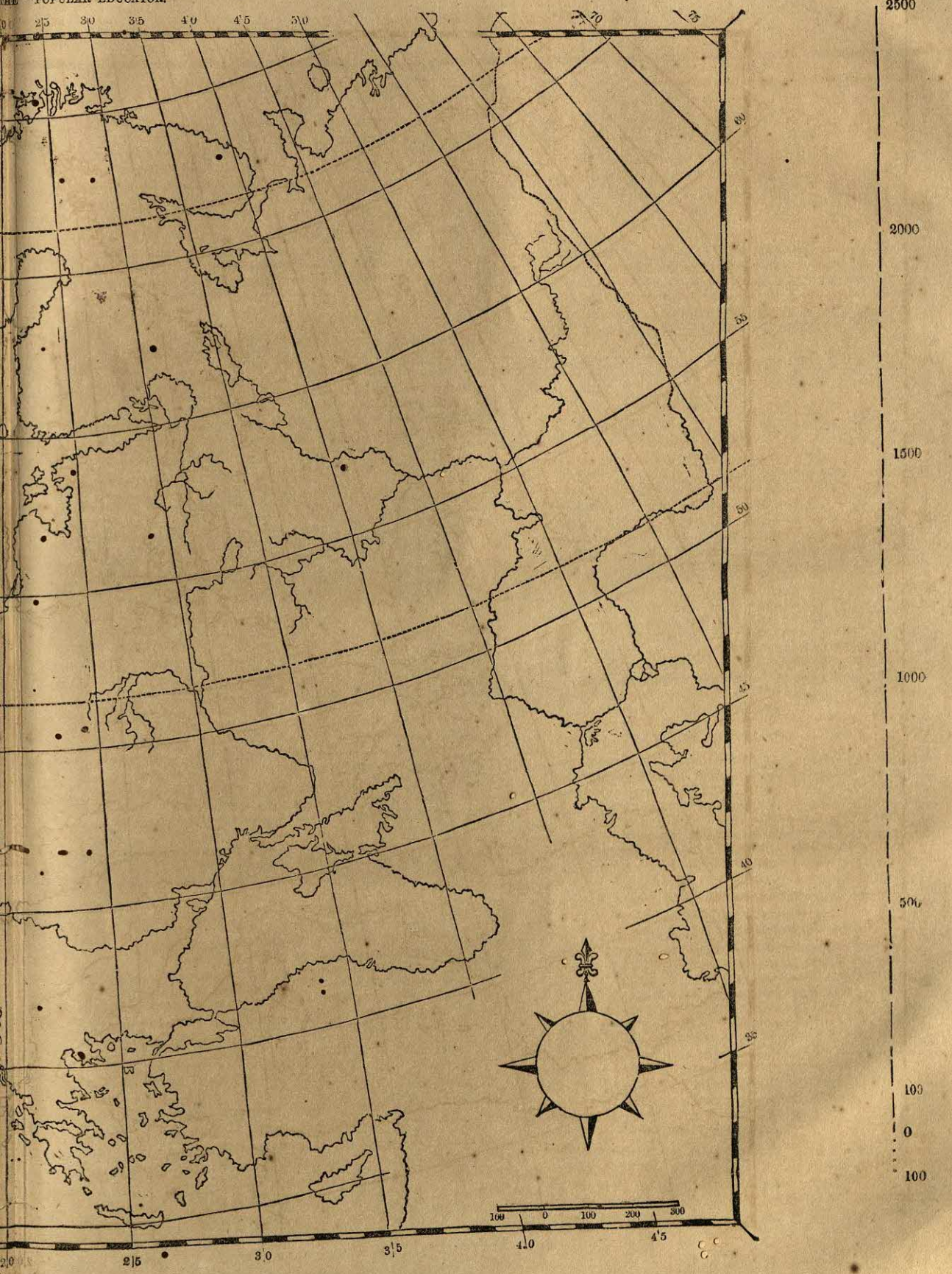
1. I have just seen a brother of yours who has returned from India. 2. A friend of mine got married last week. 3. The teacher has enjoined on me the explanation of this subject. 4. Has my father instructed you to invite your brother to us this evening? 5. No, Sir, but he instructed me to tell my father that he might call on him to-morrow morning. 6. The scholar, upon the request of the teacher, handed the book to him. 7. Riches do not suffice to make a man happy. 8. A true Christian, rather than betray his belief, endures great suffering. 9. Is the dinner already put on the table? 10. No, Sir, it is not served up, it is not yet ready. 11. It is not sufficient for a prudent man to know what is right, but he also acts rightly.

Section XCI.

Genießen, to *enjoy*, governs, as already seen, Sect. 47., the genitive or accusative. It also signifies to take nourishment, to

Scale of Latitudes.

ENGRAVED EXPRESSLY FOR


SCALE OF BRITISH MIL
2500
2000
1500
1000
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100
0
100
2.0
2.5
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5.0
70
75
60
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50
45
40
35
100
0
100
200
300

eat or drink, in which use it governs the accusative only. Ex.: Ich habe heute wenig genoſſen; I have eaten but little to-day.

I. Auf frequently has the force of an adjective. Die Thür iſt auf; the door is open, or the Thür iſt offen. Zu is similarly used; as, Die Thür iſt zu; the door is to (closed). In this use they are frequently compounded with verbs; especially with machen. Ex.: Er hat das Fenſter auf=, und ſie hat es zugemacht; he has opened the window, and she has shut it.

II. In der That, (literally "in the deed") answers to the English *indeed;* in reality. Ex.: Ich weiß in der That nicht, was ich davon denken ſoll; I really do not know what to think of it. Die Freundſchaft ſcheint mir in der That beſſer. (Gellert.) Friendship appears indeed to me better.

III. Zu Stande bringen=to bring to a stand or *point*, i. e. to bring to pass; to accomplish; as, Guter Wille und Ausdauer vermögen viel zu Stande zu bringen; good will and perseverance can accomplish much.

IV. Langeweile, compounded of lang, long and Weile, while or time=tediousness, weariness, heaviness; as, Was den Thoren vergnügt, macht dem Weiſen gewöhnlich Langeweile; that which delights the fool, generally causes weariness to the wise (man). Sich langweilen=to become weary; as, Die Rede war ſehr langweilig, deßwegen langweilte er ſich; the discourse was very wearisome, therefore he became weary. Langweilen=to cause tediousness, to bore. Ex.: Er langweilte uns mit ſeinem Geſpräch; he wearied us with his talk.

Exercise 94.

An'rathen, to advise, counsel;
Auseinan'dergehen, to go asunder;
Einſchlafen, to fall asleep;
Gene'ſen, to recover;
Gene'ſung *f.* recovery, convalescence;
Geſpräch, *n* talk, conversation, dialogue;
Getrau'en, to dare, venture;
Kehren, to turn, mind, care for, regard;
Lage, *f.* state, condition;
Langewei'le, *f.* (IV.);
Müdigkeit, *f.* weariness, fatigue;
Trotzdem, notwithstanding;
Urtheil, *n.* judgment;
Vertraut, confidential, intimate;
Vielleicht', perhaps, possibly;
Voran'ſchreiten, to proceed, progress;
Vorher', before, beforehand;
Wählen, to elect, choose;
Wandern, to wander, walk;
Zeugniß, *n.* witness, testimony;
Zufällig, accidentally, casually;
Zu'hörer, *m.* auditor, hearer, *pl.* auditory.

Er hat während ſeiner Krankheit gar nichts genoſſen. — During his sickness he has eaten nothing at all.
Der Knabe will ein wenig bei ſeinem Oheim bleiben. — The boy wishes to remain a little (while) with his uncle.
Ich habe heute zufälliger Weiſe einen alten Bekann'ten getroffen. — I have accidentally met an old acquaintance to-day.
Ich weiß in der That nicht, was ich thun ſoll. — I really (indeed) do not know what I ought do do.
Er getraut' ſich nicht in das Waſſer (zu gehen). — He does not venture into the water (to go into the water).
Haben Sie es ſchon zu Stande gebracht'? — Have you already accomplished it?
Der Knabe ſchlief ein am grünen Geſta'de. (Schiller.) — The boy fell asleep on the green shore.
Das Geſchwätz der Menge lang'weilt ihn. — The tattle (prating) of the crowd annoys (bores) him.
Er leidet an Langewei'le. — He is troubled with ennui.

1. Der Kranke will nichts genießen, trotzdem, daß es ihm vom Arzte angerathen worden iſt. 2. Er hat nur ganz wenig bei uns genoſſen. 3. Mein Bruder iſt wieder von ſeiner Krankheit geneſen. 4. Die Geneſung ſchreitet bei dieſem Kranken nur langſam fort. 5. Die Kirche geht um halb elf des Morgens an (Sect. 79. VI.) und um halb zwölf wird ſie gewöhnlich geſchloſſen. 6. Er machte ihn zu ſeinem vertrauteſten Freunde, ohne ihn vorher geprüft zu haben, oder ſonſt ein Zeugniß über ſeine Treue und Verſchwiegenheit zu haben. 7. Nicht wähle zum Vertrauten einen Jeden du, das leere Haus iſt offen, das reiche zu; —— wähl' Einen dir und ſuche nicht den Andern, bald wird, was Dreie wiſſen, zu Allen wandern. 8. Kommen Sie vielleicht dieſen Nachmittag ein wenig zu mir? 9. Kommen Sie vielleicht dieſen Abend in das Concert? 10. Es hängt von Niemandem ab (Sect. 81. I.), er lebt, wie es ihm gefällig iſt. 11. Er ſteht des Morgens auf, wann es ihm gefällig iſt, das eine Mal frühe und das andere Mal ſpät. 12. Er ſpricht und handelt, wie es ihm gefällt, ohne ſich an das Urtheil der Leute zu kehren. 13. Ich habe ihn zufällig zu Hauſe angetroffen. 14. Zufällig traf ich ihn im Theater. 15. Es iſt in der That nicht ſo leicht, ſich in alle Lagen des Lebens geduldig zu ſchicken. 16. Es iſt in der That wahr, was dieſe Frau geſprochen hat. 17. Was ſich Keiner getraute, hat dieſer zu Stande gebracht. 18. Er hat die Sache zu Stande gebracht. 19. Das Kind ſchlief aus Müdigkeit ein. 20. Die Geſellſchaft langweilte ſich ſehr und ging früh auseinander. 22. Er langweilte nicht nur mich, ſondern auch meine Freunde.

1. Why have you opened the window? 2. It is so very warm in the room, and I like to enjoy the fresh air. 3. I pray you, shut the window, and open the door. 4. Shut the door that the window might be open. 5. Really I do not know, what to do with this son of mine; he will not listen to my advice. 6. Most of his auditors fell asleep during his long speech. 7. A good work can only be accomplished through attention. 8. My daughter's recovery proceeds but slowly. She will not eat, notwithstanding she is advised by the physician.

LESSONS IN LATIN.—No. XLVII.

By John R. Beard, D. D.

SYNTAX.—AGREEMENT.

5. A noun may agree with a verb, e. g.,

1. { Nauta navigat. / *A sailor sails.* } 2. { Nautae navigant. / *Sailors sail.* }
3. { Tu nauta navigas. / *Thou sailor sailest.* } 4. { Vos nautae navigant, nos nautae navigamus. / *You sailors sail, we sailors sail.* }

Here it is seen that the noun agrees with its verb in number and person. Observe that in 3 nauta is not in the vocative case, but in the nominative, being in apposition with tu.

A noun in the singular number must have the verb in the singular number. A noun of the first person must have the verb in the first person. A noun in the second person must have the verb in the second person. A noun in the third person must have the verb in the third person. These statements may be generalised into the rule,

The subject agrees with its verb in number and person.

The subject may be either simple or compound. A simple subject consists of one noun. A simple subject having its noun in the singular requires the verb to be in the singular. A simple subject having its noun in the plural requires the verb to be in the plural. Some nouns, though singular in form, have a plural signification; a simple subject consisting of one such noun is constructed with a plural verb.

Nouns which, being singular in form, have a plural signification, are called *nouns of multitude*, because they denote many objects. They are also termed *collective* nouns, e. g.,

{ Magna multitudo convenerant, / *A great multitude had assembled.* }

A *collective* noun may be viewed in two lights: either in relation to the individual objects which separately enter into it, or in relation to the one whole which these individual objects unitedly form. In the former case, collective nouns obviously have a plural import, consequently they have a plural construction; in the latter case, collective nouns present a single idea or conception, and therefore take a verb in the singular. Whichever of these two states, singular or plural, is prominent in the mind, that determines the number of the verb. It is possible, in regard to the same object, that the two states may succeed each other, an object being conceived of first as plural, and then as singular. Accordingly, the same subject may have a plural verb and a singular verb, e. g.,

{ Pars major *receperunt* sese, pars *perstitit* ad vallum. / *The greater part fled, a part stood firm at the fosse.* }

In this sentence, Livy, by the judicious use of the plural and the singular verb, has painted first, the scattered fugitives, and secondly, the dense phalanx of the band which kept its post.

In the example just given, the plural verb precedes the singular. The reverse may be the case, e. g.,

{ Pars STUPET innuptae donum exitiale Minervae,
{ *A part* IS *astounded at the destructive gift of Minerva,*

{ *Et molem* MIRANTUR *equi.*
{ *And* ADMIRE *the huge size of the horse.*

Here the singular form of pars puts the verb which it immediately preceeds into the singular number. At the end of the sentence, the writer's mind was free from the influence of that form, and, thinking of the gazing Trojans as individuals, he naturally employed a plural verb.

The principles here laid down may, as principles, be considered as applicable to the English language, though in details they may in such application require some modification. For instance, pars, and similar nouns (turba, vis, multitudo, exercitus, juventas, nohilitas, gens, plebs, vulgus) in Livy, are constructed with a verb in the singular, thus corresponding with our English usage; but in the above passage from Virgil, pars has after it stupet, a singular form, and finds in the rendering, *is astounded*, a translation which offends our English grammatical sense.

A subject may be compound. A subject is compound when it contains two or more nouns, e. g.,

{ Pompeius, Lentulus, Scipio, Afranius foede *perierunt.*
{ *Pompey, Lentulus, Scipio, and Afranius perished miserably.*

Here you see that a compound subject takes the verb in the plural. A compound subject is an abbreviated form of two or more simple subjects. The example just given, if analysed, resolves itself into these simple subjects:—Pompeius periit; Lentulus periit; Scipio periit; Afranius periit. Of course, when these single subjects are put together, they form a plural subject, and so demand a plural verb.

If, however, the single subjects combine so as to form a unit, or so as to give the idea of unity, then the verb is put in the singular number, e. g.,

{ Tempus necessitasque postulat;
{ *Time and necessity demands;*

that is, *the necessity of the occasion demands*. Two nouns are often employed to express one idea, an idea which could not otherwise be so well expressed; in such cases, the unity of the thought requires a singular verb.

The verb must also be in the singular, when prominence is given to one of the nouns forming a compound subject, e. g.,

{ Aetas et forma, et super omnia ROMANUM NOMEN, te
{ *Your age and form, and especially your Roman name, has*
{ ferociorem FACIT,
{ *made thee too fierce.*

The proximity of a singular noun to the verb may have the effect of putting it into the singular number, though other nouns in the subject are plural, e. g.,

{ Nunc, mihi nihil libri, nihil litterae, nihil DOCTRINA PRODEST.
{ *Now, neither learning does me good, nor books, nor letters.*

Of the nouns in a compound subject, each one may be conceived of as applied to the verb separately, and so the singular number be rendered necessary, e. g.,

{ Dubitare VISUS ET SULPICIUS et Cotta.
{ *Sulpicius seemed to doubt and Cotta too.*

Hence disjunctive particles, inasmuch as they separate a compound subject, take the verb in the singular, e. g.,

{ Si Socrates aut Antisthenes *diceret.*
{ *If Socrates or Antisthenes said.*

The plural is, however, used when the two or more nouns, though spoken of separately, concur in the act set forth in the verb, e. g.,

{ Si quid Socrates aut Aristippus contra morem civilem *fecerint.*
{ *Whatever Socrates or Aristippus may have done contrary to social*
{ *usage.*

A construction exclusively according to the sense puts the verb in the plural when the subject, besides a noun singular in the nominative case, contains a plural noun (one or more) in the ablative case, e. g.,

Demosthenes cum ceteris *erant expulsi.*
Demosthenes with the rest was expelled.

This latitude is not permissible in English.

VOCABULARY.

Cypri, *at Cyprus*; Lesbi, *at Lesbos*; vis telorum, *literally, power of weapons*,—that is, *a great number*; so in Devonshire, people speak of *a power of grapes*; and in other parts we find the phrase *a power of words*.

EXERCISES.—LATIN-ENGLISH.

Mollis educatio omnes nervos et corporis et animi frangit; nimius somnus neque corpori neque animo prodest; venti mox pluviam, mox serenitatem adducunt; ab omnibus probatur is qui dulce cum utili miscuit; credula spes vitam nostram alit, et semper cras fore melius dicit; Viriathus quatuor decim annos contra Romanos bellum gesserat; placabilitas et elementia laudabilior est quam iracundia; magna pars nostrorum vulnerati aut occisi sunt; jumentis maxime Gallia delectatur, eaque impenso parant pretio; conclamant vir paterque; senatus populusque Romanus pacem comprobaverunt; senatus et C. Fabricius perfugam Pyrrho dedidit; religio et fides anteponatur amicitiae; Conon plurimum Cypri Vixit, Iphicrates in Thraciâ, Timotheus Lesbi, Chares in Sigeo; nec enim nunc primum ant Brutus ant Cassius salutem, libertatemque patriae legem sanctissimam judicavit.

ENGLISH-LATIN.

A great number (power) of weapons will inflict wounds; the king with some generals has been taken; all men are moved by riches, poverty, and death; justice and injustice are dissimilar; the rest (of the) crowd fled; some seek the city, some the country; the nerves of the body are broken by a soft (effeminate) education; our life is nourished by credulous hope; the youth of the city prepare war; beasts of burden are procured at a great price (are dear); the senate of the Roman people will approve the peace; religion and faith have been preferred to friendship; religion and faith must be preferred to all things; Brutus and Cassius will judge the safety of the republic the most sacred law; the safety of the republic is of all laws the most sacred.

6. A pronoun may agree with a verb, e. g.,

{ Tu nidum servas, ego laudo ruris amoeni rivos.
{ *Thou keepest thy nest, I praise the streams of the pleasant country.*

Here the personal pronoun tu, which is of the second person singular, has the verb servas, which is also in the second person singular. The same relation subsists between ego and laudo.

This example affords an instance of the proper use in Latin of the personal pronouns. Inasmuch as the verb-endings indicate the person, the personal pronouns are in general neither needed nor employed. Emphasis, however, as in the case before us, may require them.

When, in a compound subject, the pronouns and nouns are of different persons, the first person prevails over the second, and the second person prevails over the third, in determining the person of the verb, which, as referring to more persons than one, must be in the plural number, e. g.,

{ Si tu et Tullia valetis, ego et Cicero valemus.
{ *If thou and Tullia (you) are well, I and Cicero (we) are well.*

The verb valetis is in the plural number, because it has a compound subject; it is also in the second person, because tu, thou, in the second person has a grammatical preference over Tullia, a noun of the third person. The facts are similar in regard to valemus. Instead of the plural, the singular sometimes occurs, e. g.,

{ *Ipse* meique ante Larem proprium *veseor.*
{ *I myself and my friends eat at our own hearth.*

Other pronouns require a singular or a plural predicate according as they convey a singular or plural idea.

The general rule is, that *Pronouns agree with their verbs in number and person*; the first person taking precedence of the second, and the second of the third.

LESSONS IN FRENCH.—No. LII.

By Professor LOUIS FASQUELLE, LL.D.

§ 36.—DEMONSTRATIVE PRONOUNS.

Singular.			*Plural.*		
Masculine.	*Feminine.*		*Masculine.*	*Feminine.*	
celui,	celle,	{ *this, that,*	ceux,	celles,	{ *these, those,*
celui-ci,	celle-ci,	*this,*	ceux-ci	celles-ci,	*these,*
celui-là,	cell-là,	*that,*	ceux-là,	celles-là,	*those.*

ce, *it, they.*

Absolute Demonstrative Pronouns.

ceci, *this,* } not used in the
cela, *that,* } plural.

§ 37.—Remarks on the Demonstrative Pronouns.

(1.) The demonstrative pronouns *celui, celle,* &c., assume the gender and number of the nouns which they represent:—

Je ne connais d'avarice permise que *celle* du temps. Stanislas Leczinsky.
Methinks no avarice is allowable unless it be that of time.

Les seules louanges que le cœur donne, sont *celles* que la bonté s'attire. Massillon.
The only praises which the heart gives are those which goodness deserves.

(2.) These pronouns are sometimes used absolutely before *qui, que, dont,* etc., in the same manner as the English personal pronouns *he, they,* &c., before *who, whom,* &c.:—

Celui qui rend un service doit l'oublier, *celui qui* le reçoit, s'en souvenir. Barthelemy.
He who renders a service should forget it; he who receives it should remember it.

Aimer *ceux qui* vous haïssent, *ceux qui* vous persécutent, c'est la charité du chrétien, c'est l'esprit de la religion. Bourdaloue.
To love those who hate you, those who persecute you, is the charity of the Christian; it is the spirit of religion.

(3.) *Celui-ci, celle-ci,* etc.; *celui-là, celle-là,* are used when it is desirable to denote the comparative proximity or remoteness expressed in English by the words *this* and *that*:—

celui-ci, *this one.* celui-là, *that one.*

(4.) *Celui-ci, celui-là,* etc., are often used to express contrast or comparison. They are then equivalent to the English expressions *the former, the latter; this one, that one*:—

Un magistrat intègre et un brave officier, sont également estimables: *celui-là* fait la guerre aux ennemis domestiques, *celui-ci* nous protège contre les ennemis extérieurs. Girault-Duvivier.
An upright magistrate and a brave officer are equally estimable: the former makes war against domestic enemies, the latter protects us against foreign enemies.

Tel est l'avantage ordinaire
Qu'ont sur la beauté les talents:
Ceux-ci plaisent dans tous les temps;
Celle-là n'a qu'un temps pour plaire. Voltaire.
Such is the ordinary advantage which talents possess over beauty: the former please at all times; the latter has but one time to please.

(5.) *Ceci, cela,* have no plural, and are used only of things. They do not refer to a word expressed before, but serve to point out objects:—

prenez *ceci, take this.* donnez-moi *cela, give me that.*

J'ai déjà dit ce qu'il faut faire, quand un enfant veut avoir *ceci* et *cela.* J. J. Rousseau.
I have already said what should be done when a child will have this and that.

(6.) *Ce,* a pronoun, must not be confounded with the demonstrative adjective *ce.* The pronoun *ce* is often used without an antecedent, as the nominative of the verb *être* in the same manner as the English pronoun *it*:—

c'est moi, *it is I.* c'est vous, *it is you.*

Ce n'est plus le jouet d'une flamme servile.
It is no longer the sport of an unworthy flame.

C'est Pyrrhus, c'est le fils et le rival d'Achille. Racine.
It is Pyrrhus; it is the son and the rival of Achilles.

For particular rules on this pronoun, see § 108.

§ 38.—Relative Pronouns.

(1.) The relative pronouns are so named on account of the intimate relation which they have to a noun or pronoun which precedes, and of which they recall the idea. The noun or pronoun so preceding the relative pronoun is called the antecedent.

(2.) Table of the Relative Pronouns:

qui, *who, which;* (sujet, nominat.) de qui, *of, from whom,* } Regime indirect, genitive and ablative.
que, *whom, which;* (rég. direct, acc.) dont, *of, from whom, which;* }

à qui, *to whom;* (régime indirect, dative.)

lequel, *who, which;* composed of the article and quel.

Singular.		*Plural.*		
Masculine.	*Feminine.*	*Masculine.*	*Feminine.*	
lequel,	laquelle,	lesquels,	lesquelles,	*who, which;*
duquel,	de laquelle,	desquels,	desquelles,	*of, from which;*
auquel,	à laquelle,	auxquels,	auxquelles,	*to which.*

y, *to it, of it,* etc. en, *of it, of them,* etc.

quoi, *what, which, why,* etc.

§ 39.—Remarks on the Relative Pronouns.

(1.) Qui, *who, which,* is generally the subject or nominative. It is used for both genders and numbers, for persons and for things. (See No. 6 of this §.)

(2.) When used for things, *qui* cannot be preceded by a preposition. Its use, in this respect, is restricted to the nominative.

(3.) It is used relatively and absolutely.

(4.) It is used relatively when it has an antecedent expressed:

Le premier *qui* fut roi, fut un père adoré. Aubert.
The first who became king, was an adored father.

L'amour avidement croit tout ce *qui* le flatte. Racine.
Love believes eagerly all that flatters it.

(5.) It is used absolutely when it has no antecedent expressed. It then offers to the mind a vague and indeterminate idea. It is rendered in English by *he who, she who, they who:*

Qui veut parler sur tout, souvent parle au hasard. Andrieux.
Who (he who) wishes to speak on every subject, speaks often at random.

Lâche, *qui* veut mourir, courageux *qui* peut vivre. Racine, Jun.
He who wishes to die is a coward; he who can support life has courage.

Qui ne fait des heureux, n'est pas digne de l'être.
He who does not render others happy is not worthy to be so.

(6.) *Qui* is also used absolutely when it is interrogative. It may then be nominatif or régime:—

qui parle? *who speaks?* *qui* voyez-vous? *whom do you see?*

(7.) Que, *whom, what, which,* stands generally for the régime direct. This pronoun is used for persons and things. It is of both genders and numbers:—

les lettres *que* j'ai, *the letters which I have,*
les hommes *que* j'ai vus, *the men whom I have seen.*

(8.) It is relative when it has an antecedent:—

La gloire prête un charme aux horreurs *qu'*on affronte. Delavigne.
Glory lends a charm to the horrors which we face.

Des lois *que* nous suivons, la première est l'honneur. Voltaire.
Of the laws which we follow, the first is honour.

(9.) It is absolute when it has no antecedent, and signifies quelle chose? *what thing?* quoi? *what?*

que voulez-vous? *what will you (have)?*
que dit-on? *what do people say?*

(10.) Quoi, *what,* is invariable, and said only of things. It may be used absolutely and relatively:—

j'ignore *ce à quoi* il pense, *I am ignorant of what he thinks.*

In the above sentence it is relative, being preceded by its antecedent *ce.*

(11.) Quoi, when absolute, means *quelle chose? what thing?* and is used mostly in interrogative and doubtful sentences:—

Il y a dans cette affaire je ne sais *quoi,* que je n'entends pas. L'Academie.
There is in that affair I know not what, which I do not understand.

Il y avait je ne *sais quoi* dans ses yeux perçants, qui me faisait peur. Fenelon.
There was I know not what in his piercing eyes, which inspired me with fear.

(12.) Dont, *of whom, of which, whose,* is used for both genders and numbers, for persons and for things. It is always employed relatively, and is, therefore, always preceded by an antecedent:—

Un plaisir *dont* on est assuré de se repentir ne peut jamais être tranquille. Mme. de La Vallière.
A pleasure of which we are sure to repent, can never be a peaceful one.

Il faut plaindre le sort du prince infortuné, *dont* le cœur endurci n'a jamais pardonné. Chenier.
We must pity the fate of that unfortunate prince, whose hardened heart has never forgiven.

(13.) Dont is preferable to de qui, *of whom,* and duquel, *of which.* When, however, the pronoun has the sense of *from whom,* i. e., when used to denote a transfer, *de qui* is better:—

Le libraire *de qui* j'ai reçu ces livres.
The bookseller from whom I have received these books.

(14.) Lequel, laquelle, lesquelles, *who, which,* should only be used in the nominative, and in the direct regimen, in order to avoid ambiguity. They may relate to persons or things:—

C'est un effet de la divine Providence, *lequel* attire l'admiration de tout le monde. BUSSI-RABUTIN.

It is an act of divine Providence, which (act) attracts the admiration of every one.

(15.) *Lequel*, preceded by a preposition—that is, *duquel, auquel, dans lequel*, &c., must always be used for things in the indirect regimen. The word *qui*, as has been mentioned above, cannot relate to things in the oblique cases :—

Un livre curieux serait celui *dans lequel* on ne trouverait pas un mensonge. NAPOLEON.

That would be a curious book in which not a falsehood were found.

La Seine, dans le lit *de laquelle* viennent se jeter l'Yonne, la Marne, et l'Oise.

The Seine, in the bed of which the Yonne, the Marne, and the Oise empty themselves.

(16.) Lequel, in all its modifications, may be used absolutely or interrogatively :—

lequel? *which one?* — duquel? *of which one?*
lequel voyez vous — *which one do you see?*

(17.) EN, *of it, of them.* This pronoun is of both genders and numbers, and relates almost always to animals and things. It is often used for the English words, *some, any*, when employed absolutely, or even when understood. It is also used as an indirect regimen in relation to things, and sometimes, but not often, in relation to persons [§ 92 (2)], instead of the personal pronouns, *de lui, d'elles, d'eux, d'elles*. [§ 103, Rule 1.]

Vous *en* parlez, *you speak of it.* — J'*en* ai, *I have some of it.*

La fortune a son prix: l'imprudent *en* abuse, L'hypocrite *en* médit, et l'honnête homme *en* use. DELILLE.

Fortune has its worth: the imprudent abuses it; the hypocrite speaks evil of it, and the worthy man uses it.

Les limites des sciences sont comme l'horizon; plus on *en* approche, plus elles reculent. MME. NECKER.

The limits of science are like the horizon, the more we approach (them), the more they recede.

La vie est un dépôt confié par le ciel; Oser *en* disposer, c'est être criminel. GRESSET.

Life is a trust confided by heaven: to dare to dispose of it, is a crime.

(18.) Y, *to it, to them, thereto, of it*, &c. This relative pronoun, of both genders and numbers, is used instead of *à lui, à elle, en lui*, &c. It is used of things, and also adverbially in the sense of *there*.

J'*y* pense, *I think of it.* — J'*y* donne mes soins, *I devote my care to it.*

J'ai connu le malheur, et j'*y* sais compatir. GUICHARD.

I have known misfortune, and I can sympathize with it.

N'*y* songeons plus, cher Paulin; plus j'*y* pense, Plus je sens chanceler ma cruelle constance. RACINE.

Let us think no more of this, dear Paulin; the longer I think of it, the more I feel my cruel constancy waver.

Vous avez peu de bien; joignez *y* ma fortune. DORAT.

You have but little property; join my fortune to it.

En quelque pays que j'ae été, j'*y* ai vécu comme si j'eusse dû *y* passer ma vie. MONTESQUIEU.

In whatever country I have been, I lived (there) as if I was to spend my life in it.

(19.) Although numerous instances may be found in which French authors have used *y* with regard to persons, these are licenses which it is not desirable to imitate.

§ 40.—INDEFINITE PRONOUNS.

(1.) The indefinite pronouns indicate persons and things without particularizing them: they are—

autrui,	*others.*	quiconque,	*whoever.*
chacun,	*every one.*	l'un l'autre,	*one another.*
on,	*one, people, they.*	l'un et l'autre,	*both.*
personne,	*no one, nobody.*	tel,	*such.*
quelqu'un,	*some, somebody.*	tout,	*every thing, whole.*

SKELETON MAPS.—No. I.

EUROPE.

In this number of the POPULAR EDUCATOR, the first of our third volume, we present our readers with a Skeleton Map of Europe, containing the lines of latitude and longitude, and the general outline of the Continent. In addition to these, there are outlines of the principal islands, and traces of the course of the principal rivers and lakes, belonging to Europe. The grand object of this map is to teach the student to fill up the interior of the map for himself, and thereby to acquire a knowledge of the relative positions of places which he could not obtain in any other way. For this purpose we subjoin a list of the names of the principal cities, towns, and places in Europe, with their latitudes and longitudes, so that the student may be enabled by himself to lay them down in their proper positions on this skeleton map, and thus learn Geography in the most effective manner possible, while he at the same time acquires the power of constructing maps in general.

Before giving this list, however, we may just make some important observations on maps in general. A map is defined as a representation of the surface of the whole globe, or of any part of it, on a flat surface. In all modern maps, the top of the map is towards the north; the bottom of it towards the south; the right hand side of it towards the east; and the left hand side of it, towards the west. We have already given our readers a description of the method of construction employed in a common map of the world, in Lesson XVI., p. 220, vol. II., and we have there shown how latitude and longitude are marked upon that map, and how they are to be read. In maps of particular countries, or of continents, the longitude is always marked at the top and at the bottom of the map, and the latitude at the sides. In this skeleton-map of Europe, the longitude is marked at the top, where it extends from 36° west to 76° east; and at the bottom, where it extends from 7½° west to 48° east: the meridian of 20° east being in the middle of the map, and extending from the top to the bottom. The latitude is marked at the right hand and the left hand sides, and extends from 30° north, to 63° north; but in the middle it extends from 34½° north to 72½° north. The meridians are drawn on this map through every 5 degrees of longitude; and the parallels of latitude through every 5 degrees of latitude; the arctic circle is drawn in its proper place, through the latitude of 66° 32′ north, and the parallel of the latitude of London through 51° 31′ north: these two parallels are dotted lines.

In the right corner of the map, at the bottom, a representation of the mariner's compass is placed, which, after the explanations we have given, may be looked upon merely as an ornament; its use formerly on maps was to point out the directions of north, south, east, and west, as well as some of the intermediate directions. The fleur de lis (*flower de luce*) always points to the north; and, of course, the point opposite to this always points to the south; the point in the middle between the north and south, and to the right hand, always points to the east, and the point opposite to this always points to the west. In the middle between the north point and the east point lies the north-east point; and in the middle between north point and the west point lies the north-west point; and so, for the south-east and the south-west points.

Below this mariner's compass is a space for the name of the map, EUROPE; and below this again is a scale, called the *scale of miles*. The beginning of the scale *here* is marked 0, the next point is marked 100 on each side of this point, so that it may be measured either way; to the right of the point marked 100 on the right, is another marked 200; and to the right of this, another marked 300. These numbers indicates the distances between any two points on the map in British miles, allowing 69 British miles and a fraction of a mile, or, in round numbers, 70 British miles to a degree. Thus, if the distance between any two points or places on the map in the compasses stretches from 0 to 100, then the distances between these two points or places is 100 British miles.

To find the distance between any two points on the map in degrees and minutes, apply the distance taken in the compasses to the degrees marked on the side of the map, *but taken in the direction of a meridian*, observing that a degree in the skeleton map is one of either of the black or the white spaces measured on a meridian; the *half* of such a space, measured in the same way, is 30 minutes; the *third* part, 20 minutes; the *fourth* part, 15 minutes; the *fifth* part, 12 minutes; the *sixth* part, 10 minutes; and so on. To assist materially in laying down places on this map, take a narrow piece of stiff paper or thin slip of wood, and graduate it, that is, mark it with degrees of latitude from 30° to 75° along the straight edge; these degrees must not be taken from the sides of the map, although these are degrees of latitude and are so marked; because they are larger than the true size in consequence of their not being drawn parallel to any meridian; that is, they are drawn

making an angle with each meridian, and hence they increase the size of the degrees between the parallels of latitude. The easiest way to construct this moveable scale of degrees from 30° to 75° is to take the distance between any two parallels of latitude on the skeleton map; and lay it off 9 times on the piece of paper or slip of wood, upon the straight edge thereof, (called the *fiducial* edge); then, subdivide each of these distances or subdivisions into five equal parts, and you will have 45 degrees marked on the fiducial edge of the scale; next, mark the lowest or first of these 30°, the next 31°, the next 32°, and so on, till you come to the last, which will be marked 75°. If you draw a longer mark at every five degrees, say at 35°, 40°, 45°, 50°, &c., you will then have your scale graduated in accordance, but not in coincidence, with the scale on the sides of the map, and applicable to the accurate measurement or laying down of any latitude. The proof of the correctness of this scale will be obtained by laying the fiducial edge along any of the meridians, say that of London (Greenwich), so that the degree marked 35° may be upon the point of intersection of that meridian with the parallel of 35°; you will then find that the degree marked 40° will be upon the point of intersection of that meridian with the parallel of 40°; and so on through all the points of intersection of that meridian with the parallels on the map.

To find the exact point on the map where any place should be laid down, whose latitude and longitude are given in degrees, look for the given degree of longitude at the top and at the bottom, and lay the fiducial edge of your graduated scale along those points which represents this degree of longitude, so that the degree marked 35° on the scale shall coincide with some points in the parallel of 35°, or the degree marked 40° on the scale with some point in the parallel of 40°, &c. Then look for the given degree of latitude on the scale, and put a mark or prick on the map close by the point on the scale which represents this degree of latitude, and this mark will be the exact point on the map, or position of the place, whose latitude and longitude are given. The reason of this is plain; for the fiducial edge of the scale represents the meridian of the place whose longitude is given, and the point on the scale which represents the given latitude, is the point of intersection of that meridian with the parallel of latitude drawn through the given place. If the latitude and longitude of the place to be laid down on the map be given in degrees and minutes, it will be necessary, in finding the points answering to the longitude at the top and at the bottom of the map, to take such a part of the degree next to the given degree, but beyond it in the order of reckoning, as the given number of minutes is of 60 minutes; and in such cases, a near approximation to the exact truth is sufficient for practical purposes. The following table will assist in this matter:—

Minutes.	Fractions of a degree.
5	$\frac{1}{12}$
6	$\frac{1}{10}$
10	$\frac{1}{6}$
12	$\frac{1}{5}$
15	$\frac{1}{4}$
20	$\frac{1}{3}$
25	$\frac{5}{12}$
30	$\frac{1}{2}$
35	$\frac{7}{12}$
36	$\frac{3}{5}$
40	$\frac{2}{3}$
45	$\frac{3}{4}$
50	$\frac{5}{6}$
55	$\frac{11}{12}$

When the part or fraction of the next degree in order answering to the given number of minutes is determined on the scale of longitude at the top and the bottom of the map, then lay the fiducial edge of your moveable scale of latitude along these points and proceed as before. The same process must be followed in determining the point on the moveable scale of latitude answering to any given number of minutes, and this point being pricked off, when the scale is in its right position, will determine the position of the given place on the map. In some maps constructed on a large scale the degrees are subdivided into equal parts of a degree, each containing so many minutes; in this case, the determination of the position of a place, when degrees and minutes are given in its latitude and longitude, becomes much more easy, and in fact suggests itself readily to the student. With these instructions, we now append our list of latitudes and longitudes, in order to enable our students to proceed at once to the filling up of the map.

Names of Places.	Latitudes.	Longitudes.
Aalborg, Denmark	57° 3′ N.	9° 57′ E.
Aarhus, do.	56° 10′	10° 14′
Abbeville, France	50 7	1 50
Aberdeen, Scotland	57 9	2 6 W.
Abo, Finland	60 27	22 20 E.
Agen, France	44 12	0 37
Aix, France	43 32	5 27
Ajaccio, Corsica	41 55	8 44
Akerman, Russia	46 12	30 44
Alby, France	43 56	2 9
Alcmaer, Holland	52 38	4 45
Algesiras, Spain	36 8	5 26 W.
Alicante, Spain	38 21	0 29
Almeria, Spain	36 51	2 31
Altengaard, Lapland	69 55	23 4 E.
Altona, Germany	53 33	9 58
Amiens, France	49 54	2 18
Amsterdam, Holland	52 22	4 53
Ancona, Italy	43 38	13 29
Angers, France	47 28	0 33 W.
Angouleme, France	45 39	0 9 E.
Annan, Scotland	54 59	3 15 W
Antwerp, Belgium	51 13	4 24 E.
Aranjuez, Spain	40 2	3 36 W.
Arkangel, Russia	64 34	40 43 E.
Arendal, Norway	58 27	8 51
Arles, France	43 41	4 38
Arras, France	50 18	2 46
Astrakan, Russia	46 21	48 3
Athens, Greece	37 58	23 14
Auch, France	43 39	0 35
Augsburg, Germany	48 22	10 55
Auxerre, France	47 48	3 34
Aveiro, Portugal	40 38	8 38 W.
Avignon, France	43 57	4 49 E.
Avranches, France	48 41	1 21 W.
Aylesbury, England	51 49	0 49
Azov, Russia	47 3	39 10 E.
Barcelona, Spain	41 22	2 10
Basle, Switzerland	47 34	7 35
Bassano, Italy	45 46	11 45
Bayonne, France	43 29	1 28 W.
Beachy Head, England	50 44	0 15 E.
Beauvais, France	49 26	2 5
Bellisle, France	47 17	3 5 W.
Bender, Russia	46 51	29 36 E.
Bergamo, Italy	45 42	9 40
Bergen, Norway	60 24	5 20
Bergen-op-Zoom, Holland	51 29	4 17
Berlin, Prussia	52 32	13 22
Berne, Switzerland	46 57	7 26
Berwick-on-Tweed, Scotland	55 46	2 0 W.
Besançon, France	47 14	6 3 E.
Bezieres, France	43 21	3 13
Blois, France	47 35	1 20
Bologna, Italy	44 30	11 22
Bommel, Holland	51 49	4 55
Bonifacio, Corsica	41 23	9 9
Bordeaux, France	44 50	0 34 W.
Bornholm I., Baltic	55 18	14 49 E.
Boulogne, France	50 44	1 37
Bourges, France	47 5	2 24
Brandenburg, Prussia	52 27	12 53
Branau, Germany	48 14	12 57
Breda, Holland	51 35	4 47
Bremen, Germany	53 5	8 48 E.
Brescia, Italy	45 33	10 14
Breslaw, France	51 7	17 2
Brest, France	48 23	4 29 W.
Bridgewater, England	51 8	3 0
Briel, Holland	51 54	4 10 E.
Brieux, St., France	48 31	2 44 W.
Brighton, England	50 50	0 8
Bristol, England	51 27	2 35

Names of Places.	Latitudes.		Longitudes.		
Brixen, Austria	46°	40′	11°	37′	E
Bruck, Austria	47	24	15	16	
Bruges, Belgium	51	13	3	14	
Brunn, Austria	49	11	16	35	
Brunswick, Germany	52	16	10	32	
Brussels, Belgium	50	51	4	22	
Bucharest, Walachia	44	27	26	8	
Buckingham, England	52	0	0	59	W.
Buda, Hungary	47	30	19	3	E.
Burgos, Spain	42	21	2	40	W.
Cadiz, Spain	36	32	6	17	
Caen, France	49	11	0	22	
Caffa, Crimea	45	7	35	13	E.
Cagliari, Sardinia	39	13	9	6	
Cahors, France	44	26	1	27	
Calais, France	50	58	1	51	
Calmar, Sweden	56	41	16	26	
Calvi, Corsica	43	24	8	45	
Cambray, France	50	11	3	14	
Cambridge, England	52	13	0	1	
Camerino, Italy	43	6	13	24	
Candia, Crete	35	19	25	18	
Canterbury, England	51	17	1	5	
Carcassone, France	42	13	2	21	
Cardigan I., Wales	52	8	4	40	W.
Carlsburg, Hungary	46	4	23	34	E.
Carlscrona, Sweden	56	7	15	33	
Carlshamn, Sweden	56	11	14	51	
Carmarthen, Wales	51	51	4	19	W.
Carrickfergus, Ireland	54	43	5	46	
Carthagena, Spain	37	36	1	0	
Cassel, Germany	51	19	9	35	E.
Castiglione, Italy	42	46	10	52	
Castres, France	43	37	2	15	
Catania, Sicily	37	28	15	5	
Cavan, Ireland	53	52	7	25	W
Cephalonia I., Mediterranean	38	27	20	33	E.
Cefalu, Sicily	38	0	14	3	
Cerigo I., Mediterranean	36	6	22	52	
Chalons (Marne), France	48	57	4	22	
Chalons (Saone), France	46	47	4	51	
Charkow, Russia	50	0	36	27	
Chartres, France	48	27	1	29	
Chelmsford, England	51	44	0	28	
Cheltenham, England	51	54	2	4	W
Cherbourg, France	49	39	1	37	
Cherson, Russia	46	38	32	39	E.
Chester, England	53	11	2	53	W.
Chichester, England	50	50	0	47	
Christiania, Norway	59	55	10	48	E.
Christiansand, Norway	58	8	8	3	
Christianstad, Sweden	56	1	14	10	
Christiansund, Norway	63	7	7	42	
Christinaestad, Russia	62	16	21	18	
Cilli, Austria	46	40	15	25	
Civita Vecchia, Italy	42	5	11	45	
Clagenfurt, Germany	46	37	14	20	
Clear, Cape, Ireland	51	25	9	29	W.
Clermont, France	49	23	2	25	E.

(To be continued.)

ANSWERS TO CORRESPONDENTS.

PUNCTUATION.—UN JEUNE HOMME: The object of punctuation is to divide written language into such portions as a correct speaker would naturally divide it into. The critic, caricatured by the cynic, when asked how Garrick spoke the soliloquy, replied, "Oh, against all rule—*most ungrammatically!* Between the nominative case, which, your lordship knows, should govern the verb, he suspended his voice a dozen times—three seconds and three-fifths by my stop-watch, my lord, each time." This critic founded his opinion as to Garrick's inaccuracy on too blind an adherence to the grammatical structure of a sentence—not always a safe rule, either in writing or speaking. Points are given to mark the sense—to give point to the style. The points used are the comma, the semicolon, the colon, the period, the interrogative and exclamatory points; other points and marks are the parenthesis, brackets, the dash, the caret, the apostrophe, quotation marks, hyphen, &c. The proper use of capital letters is also a matter of considerable importance. The COMMA, which denotes the smallest division in the construction of sentences, should not come in between the subject, or nominative, and the verb, or predicate. Two or more words, as "Reason, virtue, answer one great aim," are separated by the comma; when joined by a conjunction, the comma must not be used. Words like "hence," "come hither," "besides," are separated by a comma from the remainder of the sentence. Sentences containing correlative words, and having each a nominative and a verb expressed, are separated by a comma. Words placed in opposition to each other are distinguished in the same way. Relative pronouns, except when closely connected with the antecedent, generally admit of a comma before them. When a verb is understood or implied, a comma may often properly be introduced. A SEMICOLON is placed between the members of a sentence which are not so closely connected as those which are separated by a comma. Three rules may be given:—1. A semicolon is placed between two parts of a sentence when these are divided by commas into smaller portions. 2. A semicolon may be placed between two clauses, one of which is explanatory of the other. 3. Short sentences, slightly connected, are also separated by a semicolon. The COLON is used to divide a sentence into two or more parts less connected than those which are separated by a semicolon, but not so as separate distinct sentences. Here, again, three rules may be given:—1. The colon may be used when a member of a sentence is complete in itself, but followed by some further illustration of the subject. 2. When a semicolon, or more than one has preceded, and a still more emphatic pause is necessary to mark the connecting or concluding sentence. 3. When a quotation or speech is introduced. The PERIOD marks the completion of a sentence; and it should also be used after all abbreviations, as "Dr.," "Esq.," &c. The INTERROGATIVE POINT denotes, as the name, of course, implies, a question. The EXCLAMATION POINT is used after sudden expressions of surprise, and after invocations and addresses. The importance of correct punctuation cannot be too earnestly maintained; but the writer, having a proper knowledge of the value of the punctuation points, should be guided in their use more by his own good sense—by common sense—by the sense which he desires to convey in his composition to the reader—than by any hackneyed or stereotyped rules, however learnedly set forth. Our correspondent will find ample information as to the rules of punctuation generally adopted, in Fowler's work on the English Language, published in John Cassell's "Educational Course."

ALMA.—All history is important. History has not inappropriately been described as philosophy teaching by example. It is a book of records—a book that contains the particulars of those experiments in political and social life which mankind have, very expensively, been trying on themselves from the beginning. It would be well for you to read the history of the ancient empires; Rollin is the standard authority. You should thoroughly acquaint yourself with the history of Greece and Rome, but most particularly with the history of your own land. English history divides itself into great eras. There is, first of all, the aboriginal condition of the British people before the invasion of the Romans; there is the Roman period, full of interest and instruction; there is the Saxon period, succeeded by the Norman Conquest and the gradual mingling of the conquerors and the conquered under the Plantagenet kings. We should recommend, first of all, your mastering the outlines of English history; Romans, Saxons, Normans; Plantagenets, rival Roses, Tudors, Stuarts, Guelphs: trace the connection between these periods; observe the gradual advancement of the people, and the various influences brought to bear upon them by the Latin Church, the Reformation, the struggle for political liberty. Do not content yourself with a mere knowledge of facts and dates; thus viewed, history becomes little better than an old almanack. Grapple with principles. "Cassell's Illustrated History of England," and Dr. Ferguson's Popular "History of England," will furnish you with valuable help in your studies; but to go thoroughly into the subject, you should obtain works distinctly bearing on each great period of history, such as Turner's "Anglo-Saxons" and Thierry's "Norman Conquest."

J.B.—Our "Hand-book of Book-keeping," "Model Copy Books," and "Hand-book of Business" would all be useful to you. Study Lessons in English and French given in the POPULAR EDUCATOR.

ECOLIER.—Belisarius was one of the body guard of Justinian, and he exercised his first command in an expedition to Persarmenia. On his return he was nominated to the government of Dara, where, after the accession of Justinian to the throne, he built a strong fortress. This work excited the indignation of the Persians; they commanded him to desist, and, on his refusal, fell upon his scanty forces, put them to the rout, and utterly destroyed the fortress. Three years later Belisarius defeated the Persians in the decisive battle of Dara, and this was followed by some remarkable successes, so skilfully managed as to turn even a defeat which he sustained into a severe disaster for his foes.

L. G. V. S. might consistently study together Latin, English, Euclid, Geography, Arithmetic. Any question he submits will receive attention.

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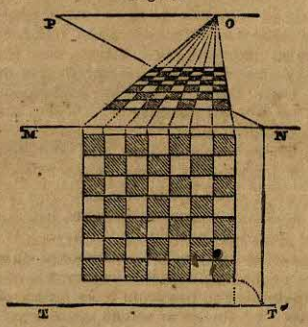
LESSONS IN DRAWING.—No. IX.

PERSPECTIVE.—Section III.

(*Continued from page* 378).

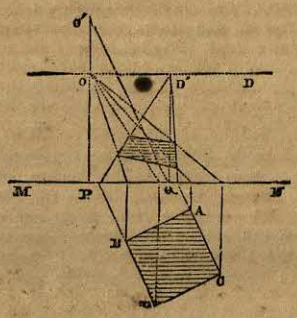
Taking the line T T′ for the intersecting line, as in the preceding lesson, fig. 81, the following example shows how a tesselated pavement, divided into forty-nine small squares, is put into perspective.

Fig. 82.



In fig. 82, P is the distance point; drawing N P, as before, and bringing up the perpendicular lines which divide the figure, to M N, the intersections of N P, with lines drawn from the points in M N, to O the centre, give the points in N P, through which lines, drawn parallel to M N, will produce the horizontal lines of squares in the perspective.

Fig. 83.

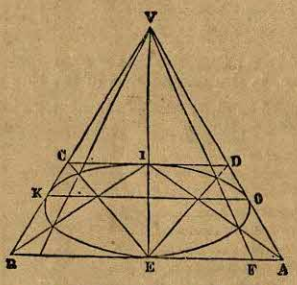


In fig. 83, you see how to put a square in perspective in another manner. The plan is not reversed as in former figures; P O′ is the distance of the eye, which is made equal to O D, and being set up on the ground line M N, the effect is as if the horizontal line were brought to coincide with the ground line; O Q being drawn parallel to A C, and Q being brought up to the line O′ D D, we obtain D′, the vanishing point of A C. This construction gives the sides of the square; in order to get the angles, draw the perpendiculars from the corners of the square, to intersect M N; from these intersections, draw lines to the point O, and the perspective figure is complete.

This is a very serviceable method of finding vanishing points, where your object is to occupy little space with the necessary constructions. By comparing it with the figures in the preceding lessons on Perspective, the principle of the construction will be easily understood, and in practice it will be perhaps the most useful of all that we have given.

We proceed now to show the method of describing a circle in perspective. A square is drawn in the first place, circumscribing the circle; the square is then put into perspective, as in fig. 84; that in the figure has the side A D parallel to the

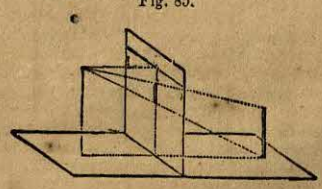
Fig. 84.



ground line; A B is then bisected in E, and the line E V is drawn to V, the vanishing point; this line divides the perspective square A B C D into halves. Drawing in each half the diagonals C E, B I, D E, A I, a line K O, drawn through the intersections of these diagonals, is parallel to the ground line, and is the perspective representation of a diameter of the original circle parallel to the ground line. The line E I is the perspective representation of a diameter at right angles to K O. Take A F, equal to one-fifth of A E, and join F and V; repeat this operation on the part B E. Then the intersections of the line F V with the diagonals D E and A I will give two points, and the intersections of the corresponding line next to B V, with the diagonals C E and B I will give two more points. These four points, with the four points E, I, K, O, give the eight points, through which an ellipse being drawn, we have the correct perspective of a circle. You will be assisted in drawing the ellipse by first determining its centre; this is done by bisecting the line I E. The perspective centre of the circle and the centre of the ellipse are not the same point. The perspective centre of the circle is determined by the intersection of I E and K O.

In the examples of other objects drawn in perspective, which will follow in subsequent lessons, the perspective of plane figures will be more fully shown; but it is requisite, in completing this section, that we should now speak of lines which are not in the ground plane. Lines which are perpendicular to the ground plane, have no vanishing point, but are always perpendicular to that plane in their perspective representations, as shown in fig. 85.

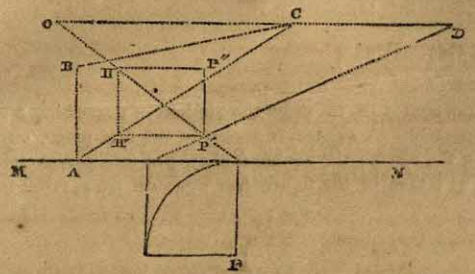
Fig. 85.



In fig. 86, let B A be the height of a perpendicular line of which it is wished to obtain the perspective; let the point P in the plan, be the *foot* of this perpendicular, or the point where it intersects the ground plane then P′ is the perspective of the point P, as obtained by the method already described; set up B A any where in the ground line, and draw lines from the points B and A, to a point C, taken any where in the horizontal line

O D. From P′ draw the line P′ H′ parallel to the ground line; from the point H′ draw the line H′ H perpendicular to H′ P′, and

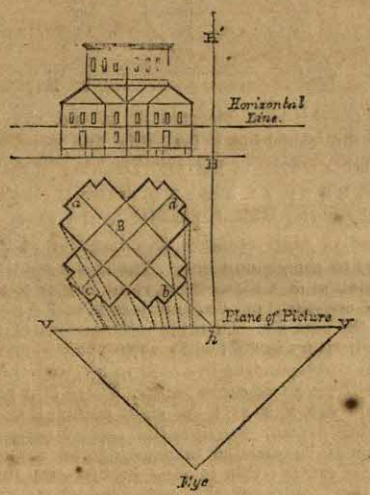
Fig. 86.



intersecting O P′ in H; then the line P′ P″ perpendicular to H′ P′, and equal to H′ H, is the perspective of the line B A.

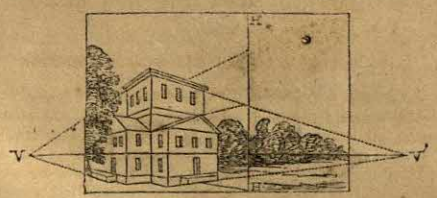
We now proceed to show the mode of drawing a perspective representation of a building.

Fig. 87.



In fig. 87, the part marked B is the plan of a building. The line V V′ is the ground line; lines drawn from the angles of the plan to the place of the eye, determine the points which when brought up to the ground line of the picture, and passing through H, show the points where the angles of the building will come in the representation.

Fig. 88.



In fig. 88 the points V V′ are the vanishing points of the sides of the same building; and as these sides are at right angles to each other, if V′ be the vanishing point of lines making an angle of 60° with the ground line, V will be the vanishing point of lines making an angle of 40° with the ground line; this point will have to be taken in the opposite direction to V′

LESSONS IN ENGLISH.—No. XLII.

By JOHN R. BEARD, D.D.

NOUNS COMMON AND PROPER.

NOUNS are ordinarily divided into *common* and *proper*. This is the most general division of nouns. A *common* noun is a noun which is common to a whole class or kind. *Tree* is a common noun, for it may be used of any tree, and of the whole class; thus we say *a tree*, and *the tree*. A *proper* noun is a noun which is proper or peculiar (proprium, Lat. *peculiar*) to an individual, as to a person, a place, a city, a nation. Thus *Alfred* is a proper noun; so is *Lancashire*, and *London*, and *England*.

The distinction between *common* and *proper* is not very satisfactory. If *tree* is a common noun because the term tree is common to all trees, might not *George* be accounted a common noun because it is common to all the Georges? And is not the name Tree as peculiar to the class Tree, as the name George is peculiar to the class of persons who bear this name? If, then, Tree is a noun peculiar to an individual and a class, and if George is the same, the distinction between common and proper does not appear determinate. In truth, the terms *peculiar* and *common* do not here essentially differ, for what is peculiar to each of a class, is common to all the members of that class.

The difficulty seems to arise from the multiplication of the objects which are considered as nouns proper. So long as there is but one *London*, the word London is strictly a proper or peculiar name. But let there be several cities so called, then a class is formed, and the original peculiarity is lost. What was once peculiar to an individual place, is now common to several places. Proper names, you thus see, pass into common names.

This want of fixedness and precision is an objection. Nevertheless, the classification of nouns as nouns *common* and nouns *proper* has so rooted itself in our grammar, that I think it better to retain it, than to propose another which might be scarcely free from exception.

Emerson has written a book on what he calls "Representative Men." There are also representative nouns or names. Thus *Solomon* stands for a *wise* man, *Cræsus* for a *rich* man, *Judas* for a *traitor*, *Demosthenes* for an *orator*, *Cicero* for the same, and *Homer* for a *poet*. Now mark how these are constructed. Shylock exclaims—

"A Daniel come to judgment! Yea, a Daniel."

And, we also say of an eminent orator, "he is the Cicero of his age." Daniel and Cicero, in themselves, are proper nouns. In virtue of the articles they become common.

As proper nouns become common, so common nouns become proper, under the influence of the article. In the latter case, however, it is the definite article which produces the effect. A *Strand* is a river's bank. *The Strand* is a thoroughfare in London, so called because it runs alongside the Thames. So we speak of *the Channel*, *the Downs*, *the United States*, *the Netherlands*. We also say *the Harbour;* but *the Harbour* is not a proper name, except at Portsmouth, where *the Harbour* means the particular harbour that is there; but the usage is local; whereas it requires national usage to convert such a common noun into a proper noun. This fact is exemplified in the phrase *the Lakes*, which from national usage means *the Lakes of Westmoreland*. *The Lakes*, therefore, has become the specific name for the whole district in the North of England where certain lakes are found. After a similar manner we speak of *the Highlands*.

The figure termed Personification (ascribing personal qualities to inanimate objects) may give to a common noun the attributes of a proper noun. "Reason is the highest gift of God; may we, O Divine Reason, listen reverently to thy voice!" In the first member or part of the sentence, *reason* is a common noun; in the second, in consequence of being the object of a direct address, it is a proper noun.

We have already seen that common nouns may represent an individual or a class. Thus *a* pigeon is one bird, but *the* pigeon is the class of birds, so denominated. Some common nouns in their essential import denote a number; such as a *fleet*, a *navy*, a *flock*. These nouns are called *collective*, or nouns of multitude. Singular in form, they are plural in import. Indeed, they denote a class. Thus a *crowd* is a number of individuals considered as forming one body; a *council* is a number of men met for consultation, forming the class councillor, in relation to some particular locality. Thus we say, *I am in the council; I am of the council;*

that is, *I am one of the class or body* known under that general term.

Proper nouns may be distinguished as names of places and names of persons. Names of places were originally descriptive; they described the places to which they were assigned. The Bible furnishes such names in abundance; for instance, a place in the Wilderness of Sinai was denominated Kibroth-Hattaavah, that is, *graves of lust*, from an historical event recorded in the book of Numbers xi. 34. Names of places have, to the unlearned, ceased to be descriptive, because the terms have lost their meaning. Those who would know the meaning of the names in English topography must study the Teutonic and the Celtic languages, which contain the original elements out of which those names were formed. Some instances have been given—I add two or three. *Orc*, the name given to the Orkney islands in the Welsh Triads, signifies that which is *extreme*, so that Orkney is the extreme or last country, the ultima Thule. *Ramsgate* means the gate or pass leading into Ram, or Ruim, the British name for the Isle of Thanet. *Canterbury* is a corruption of the Anglo-Saxon *Cantwara byrig*, the forts or strongholds of the Cantwære, that is, the men of Kent. *Cant* itself comes from *Caint*, which, in Welsh, means a plain or open country; and it was probably the old Welsh name for the slip of open land lying between the Weald and the Thames. The word *Winchester* is a *hybrid*, that is a *cross* between the British and the Latin. *Chester* is the Latin Castra, *a camp*, and denotes a Roman station. It is frequent in our names of places; e.g. Man*chester*, Dor*chester*. *Chester*. The first syllable *Win* is the Welsh *Gwent*, which like *Caint* (probably the same word) signifies an open country. It seems to have been a name given to several districts in this island. *Monmouthshire* is still called *Gwent* by the Welsh, and was called *Went* by our English chroniclers as late as the 10th century. The Welsh name *Gwent* was softened by the Anglo-Saxons into *Winte*, whence came *Winceaster*, that is *Winchester*.*

Names of places, as being proper nouns, are distinctive as well as descriptive. Thus *Paris* is the capital of the French empire. But is there another Paris in the world? Our North American brothers have unsparingly given the names belonging to *the old country*, to places of recent foundation in *the new country*. In so doing they have caused many of our names of places to lose their distinctiveness. The name *Boston* once denoted the town in Lincolnshire so called. The name was distinctive. Another *Boston* has sprung up in Massachusetts. Now, then, when we use the term, we are obliged to add some distinctive epithet, and call the one *Boston in England*, and the other *Boston in the United States*. Unless such an epithet is added, confusion must ensue. I have known a letter travel over a large part of England in search of the right *Broughton*, where lived the person for whom it was intended.

I subjoin some examples of the meaning of names of places in England.

Names of towns ending in *mouth* and *ford*.—Instances: Ply*mouth*, Tyne*mouth*, Yar*mouth*, Ports*mouth*; Ox*ford*, Strat*ford*, Rom*ford*, Sal*ford*.

The ending *mouth* denotes the *mouth of a river*, or the point where a river falls into the sea; thus Tyne*mouth* is the mouth of the river Tyne. Ports*mouth*, the mouth of the Port, originally denoted the projecting land forming the narrow opening by which ships pass from the sea (*Spithead*) into the harbour. *Ford*, the German *furt*, signifies the part of a river or stream which, from its being shallow, may be *forded*, or passed dry-foot.

Names of towns ending in *chester*, *caster*, *cester*.—Instances: Dor*chester*, Por*chester*, Lan*caster*, Don*caster*, Glou*cester*, Wor*cester*, Lei*cester*, Ciren*cester*.

These endings come from either the Roman *castra* or the Saxon *caester*, according as the one or the other may be considered as the original word; not improbably the Saxon *caester* is a derivative from the Latin *castra* or *castrum*. Castrum in Latin, as caester in Saxon, denotes a *fort*, a *fortification*, a *castle*, an *encampment*; hence a *military settlement*, and so a town or city; for many of our towns were at the first military settlements.

Names of towns and villages in *wich* or *wick*.—Instances: Green*wich*, Wool*wich*, Har*wich*, Nor*wich*, Nant*wich*, Ber*wick*, Kes*wick*.

Wich or *wick* denotes an inlet or creek formed by the bend of a river; then the land so enclosed, and then the collection of abodes fixed there; and so a *fortification*, a *village*, or *town*.

The ending *shire*.—Instances: York*shire*, Cardigan*shire*, Devon*shire*, Lancas*hire*, Ches*hire*.

Shire, connected with the German scheren (Saxon, scir), to *cut*, to *cut off*, to *divide*, denotes *a division of a country*, a *large district*; thus, York*shire* is the district which belongs to the city of York, and of which that city is the (provincial) capital.

The ending *sex*.—Instances: Es*sex*, Middle*sex*, Suss*ex*, Wess*ex*.

Sex is the remainder of the old Saxon term Seaxe, Saxe (German, Sachse), signifying *Saxons*; so that Suss*ex* means the south Saxons, &c.

The endings *borough*, *burg* (German burg, *a castle*), *bury*.—Instances: Peter*borough*, Queens*borough*, Edin*burgh*, Sud*bury*, *Bury*.

Borough, softened into *burg* and *bury*, is the German *burg* (Greek, purg), a *fortified place*, *a town*; *borough*, considered as a municipality, is a derived and comparatively recent application. *Burg or Bury* also signifies a *bosom*, that is, a *vale* environed with hills; hence the use of the word in relation to places situated as is Bury in Lancashire.

The ending or prefix *Ham*.—Instances: H*igham*, *Ham*pstead, *Ham*pton, Oak*ham*.

Ham, still continued as a separate word in the diminutive *hamlet*, denotes a *dwelling*, and hence a *village*.

The ending *minster*.—Instances: West*minster*, Ex*minster*, War*minster*.

Minster is a Saxon word signifying a *monastery* or settlement of monks; hence its application to some of our cathedrals, as the *York Minster*.

COMPOSITION.

Study, and, as well as you can, reproduce the following observations; and while you employ them as an exercise in composition, "mark, learn, and inwardly digest," so as to observe and follow their practical wisdom.

The Exercise of Thought.

A little hard thinking will supply the place of a great deal of reading, and an hour or two spent in this manner sometimes lead you to conclusions which it would require a volume to establish. The mind advances in its train of thought, as a restive colt proceeds on the road in which you wish to guide him; he is always running to one side or the other, and deviating from the proper path, to which it is your affair to bring him back.

I have asked several men what passes in their minds when they are thinking; and I never could find any man who could think for two minutes together. Everybody has seemed to admit that it was a perpetual deviation from a particular path, and a perpetual return to it; which, imperfect as the operation is, is the only method in which we can operate with our minds to carry on any process of thought. It takes some time to throw the mind into an attitude of thought, or into any attitude; though the power of doing this, and in general of thinking, is amazingly increased by habit. We acquire, at length, a greater command over our associations, and are better enabled to pursue one object, unmoved by all the other thoughts which cross it in every direction.—*Sydney Smith.*

The Folly of Universal Acquirements.

There is another foppery which is to be cautiously guarded against—the foppery of *universality*,—of knowing all sciences and excelling in all arts,—chemistry, mathematics, algebra, dancing, history, reasoning, riding, fencing, Low Dutch, High Dutch, natural philosophy, and enough of Spanish to talk about Lope de Vega: in short, the modern precept of education very often is, "Take the admirable Crichton for your model; I would have you ignorant of nothing!" Now *my* advice, on the contrary, is, to have the *courage* to be ignorant of a great number of things, in order to avoid the calamity of being ignorant of everything. I would exact of a young man a pledge that he would never read Lope de Vega; he should pawn to me his honour to abstain from Bettinelli, and his thirty-five original sonneteers; and I would exact from him the most rigid securities that I was never to hear anything about that race of puny poets who lived in the reigns of Cosmo and Lorenzo di Medici.—*Sydney Smith.*

* See Proceedings of Philological Society, vol. i. p. 9, &c.

LESSONS IN FRENCH.—No. LIII.

By Professor Louis Fasquelle, LL.D.

§ 40.—Remarks on the Indefinite Pronouns.

(1.) Autrui, *others*. This pronoun is applied only to persons. It has no change of form for gender or number, and is used only as an indirect regimen :—

L'honnête homme est discret ; il remarque les défauts d'*autrui*, mais il n'en parle jamais. St. Evremond.

The gentleman is discreet ; he observes the defects of others, but never alludes to them.

Ne fais point *à autrui* ce que tu ne voudrais pas qu'on te fît.

Do not unto others that which thou wouldest not like to be done unto thee.

(2.) Chacun, *every one, each one*. When this pronoun is absolute, and means *every one, everybody*, it is invariable :—

Le sens commun n'est pas chose commune,
Chacun pourtant, croit en avoir assez. Valaincourt.

Common sense is no common thing, though every one believes he has enough of it.

Chacun est prosterné devant les gens heureux. Destouches.

Every one bows before the fortunate.

(3.) When *chacun* is used relatively it may take the form of the feminine :—

Chacune de nous (des femmes) se prétendait supérieure aux autres en beauté. Montesquieu.

Every one of us (women) *thought herself superior in beauty to the others.*

(4.) On *(one, people, they)* is always in the nominative ; and although always construed with a verb in the third person singular, it conveys most generally the idea of plurality. It is commonly used in indefinite sentences :—

On dit, *people say, they say, it is said.* *On* parle, *somebody speaks, &c.*

On garde sans remords ce qu'*on* acquiert sans crime. Corneille.

We (one, people) keep without remorse that which we (one, people) acquire without crime.

On relit tout Racine : *on* choisit dans Voltaire. Delille.

We (people, they) read again and again all Racine ; we (&c.) select in Voltaire.

On ne surmonte le vice qu'en le fuyant. Fenelon.

We conquer vice only by avoiding it.

(5.) *On*, coming immediately after the words *et, si, que*, and *qui*, is generally preceded by the article *l'*, used for euphony :—

Ce que *l'on* conçoit bien, s'exprime clairement. Boileau.

That which one understands well, he clearly expresses.

C'est d'un roi que *l'on* tient cette maxime auguste,
Que jamais *on* n'est grand, qu'autant que *l'on* est juste. Boileau.

It is from a king that we derive this august maxim, that one is only great in proportion as he is just.

(6.) Personne, *no one, nobody*, used as an indefinite pronoun, is always masculine and singular. When used as nominative to a verb expressed, it is followed by *ne* :—

Il n'est *personne* qui ne cherche à se rendre heureux.—*Chinese thought.*

There is no one who does not seek to render himself happy.

Personne ne veut être plaint de ses erreurs. Vauvenargues.

No one wishes to be pitied on account of his mistakes.

Note.—The word *personne*, used as a *noun*, and meaning a particular person, is of the feminine gender.

(7.) Quelqu'un, *somebody, some one, any one, anybody*, used absolutely, is invariable :—

Envier *quelqu'un* c'est s'avouer son inférieur. Mlle. de L'Espinasse.

To envy any one is confessing one's self his inferior.

Quelqu'un a-t-il jamais douté sérieusement de l'existence de Dieu? Girault-Duvivier.

Has any one ever had serious doubts on the existence of God?

(8.) *Quelqu'un*, used relatively, changes for gender and number. It has then the sense of *some of, some one of* :—

Connaissez-vous *quelqu'une* de ces dames, *quelques-uns* de ces messieurs? Girault Duvivier.

Do you know any one of those ladies, any of those gentlemen?

(9.) Quiconque, *whoever, whosoever*, is generally masculine, and has no plural. It is only said of persons :—

Quiconque flatte ses maîtres, les trahit. Massilon.

Whoever flatters his masters betrays them.

Quiconque est capable de mentir, est indigne d'être compté au nombre des hommes. Fenelon.

Whoever is capable of falsehood is unworthy to be counted among the number of men.

Quiconque est soupçonneux, invite la trahison. Voltaire.

Whoever is suspicious, invites treachery.

(10.) L'un l'autre, *one another, each other, the one and the other*. This pronoun makes in the feminine *l'une l'autre*, and in the plural *les uns les autres, les unes les autres* :—

Tout le monde se confiait *l'un à l'autre* cette confidence. Rulhieres.

Everybody confided one to another this communication.

Tout le peuple suivit Virginie, *les uns* par curiosité, *les autres* par considération pour Icilius. Vertot.

All the people followed Virginia, some through curiosity, some through respect for Icilius.

Il y a deux sortes de ruines ; *l'une* l'ouvrage du temps, *l'autre* l'ouvrage des hommes. Chateaubriand.

There are two sorts of ruins ; one the work of time, the other the work of men.

(11.) L'un et l'autre, les uns les autres *(both.)* This expression may be used of persons and of things :—

La Condamine a parcouru *l'un et l'autre* hémisphère.* Buffon.

La Condamine travelled over both hemispheres.

L'un et l'autre consul suivaient ses étendards. Corneille.

Both consuls followed his standards.

Sous l'une et l'autre époque, il périt un très grand nombre de citoyens. Barthelemy.

At both epochs a large number of citizens perished.

Ils se réunissaient *les uns et les autres* contre l'ennemi commun. Girault-Duvivier.

They united with one another against the common enemy.

(12.) Tel, telle, feminine, *such, many a person, many*, is an indefinite pronoun in the following and in similar sentences :—

Tel donne à pleines mains, qui n'oblige personne. Corneille

Many a one may give bountifully without obliging any one.

Tel brille au second rang, qui s'éclipse au premier. Voltaire.

Many a person may shine in the second rank, who is eclipsed in the first.

Tel est pris qui croyait prendre. La Fontaine.

Many are caught while attempting to catch others.

Telle, sans aucun attrait pour la retraite, se consacre au Seigneur par pure fierté. Massillon.

Many [a nun] *for whom retreat has no attractions, consecrates herself to the Lord through mere pride.*

Tels que l'on croit d'inutiles amis, dans le besoin rendent de bons services. Boursault.

Many friends whom we think useless render us, in our need, valuable services.

(13.) Tel, in connection with Monsieur, Madam, &c., as *Monsieur un tel, Madame une telle*, Mr., Mrs. such-a-one, is used sustantively.

(14.) Tout, *every one, every thing*. This word, employed absolutely, is invariable :—

A la seule vertu, sois sûr que *tout* prospère. F. de Neufchateau.

Be assured that it is with virtue alone that every thing prospers.

Tout n'est pas Caumart n Bignon, ni d'Aguesseau. Boileau.

Every one is not Caumartin, Bignon, nor d'Aguesseau.

Son grand génie embrassait *tout*. Bossuet.

His great genius embraced every thing.

§ 42.—Verbs.

(1.) The verb is that part of speech which expresses an action done or suffered by the subject ; or simply indicates the condition of the subject.

(2.) The subject or the nominative of a verb is the person or thing doing the action, or being in the condition expressed by the verb. It replies to the question *qui est-ce-qui? who?* for persons ; and *qu'est-ce-qui? which? what?* for things.

(3.) Verbs admit two kinds of regimen : the *direct regimen* and the *indirect regimen*.

* The noun is in the singular, because the word *hémisphère* is understood after the word *l'un*. This rule is observed by the best French authors.

(4.) The *direct regimen*, or immediate object, is that which completes in a direct manner the signification of a verb; that is to say, without the aid of any other intermediate word. It answers to the question *qui?* whom? for persons, and *quoi?* what? for things.

(5.) The *indirect regimen*, or remote object, is that which completes the signification of the verb by means of an intermediate word, such as the prepositions *à, de, pour, avec, dans*, &c.—à qui? *to whom?* de qui? *of or from whom?* pour qui? *for whom?* avec qui? &c., for persons; and à quoi? *to what?* de quoi? *of or from what?* &c., for things.

(6.) Verbs are regular, irregular, or defective. § 44 (2).

§ 43.—Different Sorts of Verbs.

(1.) There are five sorts of verbs: active, passive, neuter, reflective or pronominal, and unipersonal.

(2.) The active verb is that which expresses an action performed by the subject, and having some person or thing for its object. This object is the direct regimen of the verb.

(3.) Every French verb after which *quelqu'un*, some one, *quelquechose*, something, may be placed, is an active verb. Thus, in the following sentences, *protéger, changer, chanter*, &c., are active verbs, because we may say *protéger quelqu'un*, to protect some one; *changer quelquechose*, to change something:—

Dieu *protège* l'innocence. RACINE.	*God protects innocence.*
L'habit *change* les mœurs. VOLTAIRE.	*Dress changes the manners.*
Les cygnes ne *chantent* pas leur mort. BUFFON.	*Swans do not sing their death.*

(4.) The passive verb is the contrary of the active verb. The active verb presents the subject as performing an action immediately directed towards an object; whereas the passive verb presents the subject as suffering or receiving an action. The passive verb is composed of the past participle of an active verb and the auxiliary *être*, to be. (See § 54.)

Nos campagnes sont *fertilisées* par la pluie. L'ACADEMIE.	*Our fields are fertilized by the rain.*
Il *était guidé* par la force de son génie. MASSILLON.	*He was guided by the force of his genius.*
Les petits esprits *sont* trop *blessés* des petites choses. LA ROCHEFOUCAULD.	*Little minds are too much vexed with trifles.*

(5.) The neuter verb marks, like the active verb, an action performed by the subject; but this action can only reach the object indirectly; that is, by means of a preposition. Hence it is that the neuter verb never has a direct regimen, and that the words *quelqu'un* and *quelquechose* cannot be placed after it. A neuter verb can never be used in the *passive voice*:—

Socrate passa le dernier jour de sa vie à *discourir* de l'immortalité de l'âme. L'ACADEMIE.	*Socrates spent the last day of his life in discoursing upon the immortality of the soul.*
Le feu qui semble éteint, *dort* souvent sous sa cendre. CORNEILLE.	*The fire which seems extinct sleeps often under its ashes.*
Les Platéens citèrent les Lacédémoniens à *comparaître* devant les Amphyctions. LE GENDRE.	*The Plateans cited the Lacedemonians to appear before the Amphyctions.*

(6.) The reflective or pronominal verb is conjugated with two pronouns of the same person; *je me, tu te, il se, nous nous, vous vous, ils se.* (See § 56):—

Je me flatte, *I flatter myself.*	*Vous vous* félicitez, *you congratulate yourselves.*
Il ne faut pas *se flatter*, les plus expérimentés ont fait des fautes capitales. BOSSUET.	*We should not flatter ourselves: the most experienced have committed capital errors.*
Les peuples *se féliciteront* d'avoir un roi qui lui ressemble. MASSILLON.	*The nations will congratulate themselves upon having a king who resembles him.*
Il ne faut pas permettre à l'homme de *se mépriser* entièrement. BOSSUET.	*We should not allow a man to despise himself entirely.*

(7.) The unipersonal verb can only be used in the third person singular: Il pleut, *it rains*; il gèle, *it freezes*; il tonne, *it thunders*:—

Pour bien juger les grands, *il faut* les approcher. AUBERT.	*To judge properly of the great, it is necessary to approach them.*
Il faut rendre meilleur le pauvre qu'on soulage. SAINT-LAMBERT.	*We should (it is necessary to) improve the poor whom we relieve.*

(8.) There are two verbs called auxiliary, because they serve to conjugate all others. They are—avoir, *to have*; and être, *to be.*

LESSONS IN LATIN.—No. XLVIII.

By JOHN R. BEARD, D.D.

GOVERNMENT.

GOVERNMENT involves dependence between words as agreement involves similarity. One word is said to govern another when the one is dependent on the other, and is modified in form and meaning by the other. Take, as an instance, the words

Pignus amoris.
Pledge of love.

This is an example of dependence or government, for amoris is dependent on pignus, and is changed by that dependence from amor to amoris.

Government may take place between

1. One noun and another noun.
2. A pronoun and a noun.
3. An adjective and a noun.
4. An adverb and a noun.
5. Prepositions and nouns.
6. Verbs and nouns or pronouns.
7. Verbs and verbs.
8. Verbs and relatives.
9. Verbs and conjunctions.

1. One noun may govern another, e. g.,

Hic est *hortus regis*;
This is the garden of the king;

where regis is in the genitive case governed by the noun hortus.

The rule then is—*One noun governs another in the genitive case.*

This construction resembles the English—*this is the king's garden*, where *king's* is in the possessive or genitive case governed by garden. King's, it will be observed, is a form derived from king, as regis is a modification of rex. Here the Latin idiom agrees with the English idiom.

The effect of this genitive, or of the governed word, is to define more exactly the governing word, e. g., we may ask: "Whose garden?" The answer is, "the king's garden." The noun in the genitive then performs the part of an attributive, and the phrase hortus regis is pretty much the same as hortus regius, *the royal garden.*

This instance of a noun-government denotes possession. Similar is the import when relationship is indicated; as, Hectoris uxor Andromache, *Andromache, the wife of Hector.*

The genitive, also, denotes a whole of which a part is taken, and hence is termed partitive (genitivus partitivus), as, partes corpŏris, *parts of the body.*

It may, moreover, signify the originator, cause, or producer; and hence the word *genitive*, from gigno, *I beget*; for instance: conjuratio Catilinae, *Catiline's conspiracy*, that is, *the conspiracy originated by Catiline*; desiderium patriae, *desire for one's native land*, that is, the longing caused in the mind by one's native land.

Of, is the general sign of the genitive, but here we have employed for; for is sometimes the only word which will give the sense of the original. The Latin genitive has a wider application than the English.

In English we employ the partitive genitive where there is in reality no partition. Thus, we say, "There were four of us," that is, "we were four;" so said the Latins, quatuor eramus, avoiding the previous form.

2. A pronoun may govern a noun or another pronoun, e. g.,

1. *Animalium alia* rationis expertia sunt, alia utentia.
Of animals, some are devoid of reason, others use (reason).

2. *Quis vestrum* est medicus?
Which of you is a physician?

Alia governs animalium in the genitive; vestrum is governed in the genitive by quis. The rule then is,

A pronoun governs a noun or a pronoun in the genitive case.

Instead of the partitive genitive, a preposition with its proper case is often used,—the prepositions so employed are e, de, inter, in, e. g.,

Acerrimus *ex omnibus nostris sensibus* est sensus videndi.
The sense of sight is the keenest of all our senses.

The neuter quid used partitively governs a genitive case, e. g.,

Quid mulieris habes uxorem?
What sort of a wife have you?

3. An adjective may govern a noun, e. g.,

Gallorum omnium fortissimi sunt Belgae.
The Belgae are the bravest of all the Gauls.

Sum *unus multorum.*
I am one of many.

Conon erat *prudens rei militaris.*
Conon was wise in military affairs.

From these instances it appears that *adjectives in the superlative degree, numeral adjectives, and adjectives denoting states of mind, govern nouns in the genitive.*

Indeed, as in English, so in Latin, all partitives govern a genitive. Accordingly, an adjective in the comparative degree may have a genitive dependent on it, e. g.,

Fratrum tuorum, soror, sum major natu.
I am the older of thy (two) brothers, sister.

An adjective in the comparative degree takes after it a noun or pronoun in the ablative, e. g.,

Dignior est mulier *marito.*
The wife is more worthy than her husband.

Instead of the ablative you may, by employing quam, put the same case after the verb as it has before it, e. g.,

Dignior est mulier *quam maritus.*
Digniorem esse *mulierem quam maritum* confirmo.

4. An adverb may govern a noun, e. g.,

Gallus *maxime omnium nobilium* Graecis litteris studuit.
Gallus studied Greek most of all the nobles.

Justitia *nihil* expetit *praemii.*
Justice seeks no reward.

The general fact may be stated thus:—

Adverbs denoting quantity, and some adverbs of place, govern nouns in the genitive case.

Maxime, which governs omnium nobilium, is an adverb of quantity. Nihil, which governs praemii (literally, *nothing of reward*), is an adverb of quantity; nihil might be considered as an indeclinable noun; then the instance would fall under the rule—"One noun governs another in the genitive case."

As an example of an adverb of place governing the genitive, take this:—

Ubi gentium sumus?
Where in the world are we?

To this category may be referred such phrases as

Eo impudentiae processit;
He went to such a pitch of impudence;

where impudentiae is a genitive governed by the adverb of place, eo. Similar is the form tunc temporis, *then of time*, at that time.

Among adverbs governing a genitive, it is usual to place gratiâ, causâ, &c., but these are really nouns in the ablative; ergo, which governs a genitive, is also a (Greek) noun in the ablative, and instar (after the manner of), classed among the adverbs that govern the genitive, is an indeclinable noun which signifies outline, likeness.

Vocabulary.

Potior (comp. of potis, superlative, potissimus), potius, *preferable*; importunus, a, um, *troublesome*; caelatum argentum, *embossed plate*; stragula vestis, *flowing robes*; pict. tab., *paintings, pictures*; praestans, tis, *excellent*; quotusquisque, *how few*; panis, is, m, *bread, a loaf*; quisque, *each*; partim, partim, *some, others.*

Exercises.—Latin-English.

Nullum malum est vehementius et importunius quam invidia; quid caelati argenti, quid stragulae vestis, quid pictarum tabularum apud illum putatis esse? quaeritur num quod officium aliud alio majus sit; estne quisquam omnium mortalium de quo melius existimes tu? pro se quisque, ut in quoque erat auctoritatis plurimum, ad populum loquebatur; mens hominum est nescia sortis futurae; veteres Germani non erant amantes literarum, sed patientes sitis, frigoris et laborum; Africa greges ferorum asinorum alit; Alexander Magnus irae non erat potens; veteres Romani gloriae fuerunt cupidissimi; aestate dies sunt longiores quam hieme; nihil est clementiâ divinius; luna terrae proprior est sole; ut animus corpore est nobilior, ita virtus praestantior est robore et externa specie; quanta honesta mors turpi vitâest potior quotu quisque philosophorum est tecum? tribuni legem promulgarunt ut consulus alter ex plebe crearetur; nos sumus permulti; Themistocles noctu de servis suis quem habuit fidelissimum ad regem misit; honoris tui causâ huc ad te venimus; Hasdrubal Gisgonis erat filius; quot estis? pauci sumus; acerrimus inter recusantes Callisthenes fuit; Themistocles plurima mala omnium Graecorum in domum Xerxis intulit; major est Neronum; Deiphŏbe sum, Glauci filia; amici regis sunt pauci; Thales sapientissimus in septem fuit; Trevirorum civitas longe plurimum totius Galliae equitatu valet; quo amentiae progressi estis? bonus amicus in malâ re dimidium est mali; potest quidquam esse absurdius quam quo minus vitae restat, eo plus viatici quaerere? tibi idem consilii do, quod mihimet ipsi; eorum beneficiorum partim ejusmodi sunt ut ad universos cives pertineant, partim singulos ut attingant; tibi divitiarum affatim est; terrorum et fraudis abunde est; tu me amoris magis quam honoris servavisti gratiâ? simulabat se se negotii gratiâ properare; omnes dono militari virtutis ergo donati sunt; unus ille dies mihi immortalitatis erat instar, quo in patriam redii.

English-Latin.

The king's wife is fair; the king's wife is fairer than the general's wife; which of the two is the wiser? Socrates is the wisest of mortals; what bread (what of bread) hast thou? to such a pitch of madness has he proceeded that all men call him a fool; the soldiers came on account of the war; for the honour of the general rewards have been given to each of the soldiers; I have enough of books; that book is to me as good as (instar) all books.

Aesopi Fabulae.

Testudo et Aquila.

Testudo aquilam magnopere orabat, ut sese volare doceret. Aquila ei ostendebat quidam eam petere rem contrariam suae naturae; sed illa nihilominus instabat, et obsecrabat aquilam ut se volucrem facere vellet. Itaque ungulis arreptam aquila sustulit in sublime, et dimisit illam, ut per aerem ferretur. Tum in saxa incidens comminuta interiit. Haec fabula docet multos cupiditatibus suis occaecatos consilia prudentiorum respuere, et in exitium ruere stultitiâ suâ.

Luscinia et Accipiter.

Accipiter esuriens rapuit lusciniam. Quae quum intelligeret sibi mortem impendere, ad preces conversa orat accipitrem ne se perdat sine causâ; se enim avidissimum ventrem illius non posse explere, et suadere adeo ut grandiores aliquas volucres venetur. Cui accipiter, "insanirem," inquit, "si partam praedam amittere, et incerta pro certis sectari vellem."

Senex et Mors.

Senex in silvâ ligna ceciderat, iisque sublatis domum redire coepit. Quum aliquantum viae progressus esset, et onere et viâ defatigatus, fascem deposuit, et secum aetatis et inopiae mala contemplatus, Mortem clarâ voce invocat, quae ipsum ab omnibus his malis liberet. Tum Mors, senis precibus auditis, subito adstitit, et quid vellet percunctatur. At senex, quem jam votorum suorum poenitebat, "nihil," inquit, "sed requiro qui onus paululum allĕvet, dum eum rursus subeo."

Vocabulary.

Testudo, ĭnis, f. *a tortoise*; insto, 1. *I urge*; obsecro 1. *I instruct*; volucris, e, *able to fly*; ungula, ae, f. *a talon*; suffero, sufferre sustŭli, sublatum, 3. *I raise up*; comminuo, 3. *I break in pieces*; occaeco, 1. *I make blind*; respuo, 3. *I refuse, reject*; luscinia, ae, f. *a nightingale*; venor, 1. dep. *I hunt for*; Mors (with a capital M), *death*, the personification of death, death considered as a divinity.

LESSONS IN GERMAN.—No. XLIII.

Section XCII.

Taugen, answers to the English phrase, "to be good, or fit for." Ex.: Wozu taugt dieses? What is this good for? or, more literally, whereto serves this? Das taugt nichts; that is good for nothing. From this is derived the noun „Taugenichts," worthless fellow; as, ein langer Schweif von heuchlerischen Taugenichtsen (Wieland); a long train of good-for-nothing fellows.

I. Große Augen machen, (literally, to make big eyes,) is a phrase signifying, "to appear surprised, or astonished."

Exercise 95.

Anbieten, to offer, proffer, tender;
Anführung, *f.* leading, conduct, command;
Angriff, *m.* attack assault;
Batterie, *f.* battery;
Bezahlen, to pay;
Darbieten, to offer;
Dragoner, *m.* dragoon;
Eintreten, to enter, step in;
Erschöpft, exhausted, spent;
Erstürmen, to take by storm;
Führer, *m.* leader, commander;
Gulden, *m.* florin, guilder;
Härte, *f.* harshness, unkindness;
Hinausspringen, to spring out, rush out;
Kreuzer, *m.* a small coin;
Preußisch Prussian;
Taugen, (See above);
Türkisch, Turkish;
Unbilligkeit, *f.* unreasonableness, injustice;
Ungarisch, Hungarian;
Verweichlichen, to effeminate;
Verzehren, to consume, eat;
Vorsetzen, to place before, put before;
Wirth, *m.* host, landlord, inn-keeper.

Es sind ihrer noch einmal so viele als unser.	There are twice as many of them as of us.
Ich habe ihm Geld angeboten.	I have offered him money.
Gold taugt nicht zu Schneidewerkzeugen, weil es zu weich ist.	Gold is not fit for edge-tools, because it is too soft.
Er machte große Augen, als er mich nach langer Trennung wieder erblickte.	He seemed surprised, as he saw me again, after (a) long separation.

1. Die Räuber setzten sich um ein großes Feuer, welches sie in der Mitte des Waldes angezündet hatten. 2. Er setzte sich an den Tisch. 3. Er setzte sich auf sein Pferd, und sprengte die Stadt hinaus. 4. Die Dragoner saßen alle zu Pferde, und warteten nur noch auf ihren Führen um den Angriff zu beginnen. 5. Er saß auf seinem Throne so finster und so bleich. (Uhland.) 6. Wir trafen ihn unter einem Baume sitzend. 7. Der Gast fragte den andern (Sect. 33. VIII.) Morgen den Wirth, was er schuldig sei. (Sect. 44. VI.) 8. Er hatte für das, was er verzehrt hatte, einen preußischen Thaler, oder einen Gulden fünf und vierzig Kreuzer zu bezahlen 9. Dieser Mann ist mir hundert Thaler schuldig. 10. Nachdem er all sein Geld in der Fremde verzehrt hatte, kam er arm und entblößt in seine Heimath zurück. 11. Der Soldat verzehrte die ihm vorgesetzten Speisen mit dem größten Appetit. 12. Sind es ihrer viele, die die Festung vertheidigen? 13. Ja, es sind deren viele, aber es dürften ihrer noch so viele sein, so fürchten wir uns doch nicht. 14. Es waren ihrer etwa hundert, die unter Anführung eines noch jungen Soldaten die Batterie erstürmten. 15. Ein verweichlichter Mensch taugt zu keiner Arbeit. 16. Dieser Beweis taugt nichts. 17. Der ungarische General bot freiwillig dem türkischen Kaiser seine Dienste an. 18. Der Bauer bot dem erschöpften Reisenden einige Aepfel an. 19. Man liest oft in den Zeitungen, es biete sich eine gute Gelegenheit dar, sein Glück zu machen. 20 Er beklagt sich über Unbilligkeit und Härte. 21. Du versagst mir die Freiheit, mich bei dir beklagen zu dürfen. 22. Er wußte nicht recht, wie ihm geschah, und machte bei diesem Ereignisse große Augen. 23. Er machte große Augen, als er den Freund eintreten sah, den er in beinahe zehn Jahren nicht gesehen hatte.

1. This knife is good for nothing, give me another. 2 What you have done is good for nothing. 3. What is a dishonest man good for? 4. These poor people ate the food that was offered them with the greatest appetite. 5. We read in every paper, that Australia offers a good opportunity to make one's fortune. 6. We were astonished to see our friend, who we believed was in Germany. 7. This man owes me more than twenty pounds; but he says he has paid me. 8. I will pay you, but you cannot prove that I owe you anything. 9. Have you seen your brother to-day? 10. Yes, I saw him, sitting under a tree in our garden. 11. The soldiers mounted their horses and waited for the signal of their commander to begin the attack.

Section XCIII.

Gehen and zugehen (in the sense "to succeed or get on") are often used impersonally like the English "go." Ex.: Wie geht es? How goes it? Es geht recht munter zu; it is going off right merrily.

I. Erst (first) often answers to the English "only, not before, no more than, just," &c.; as, Es sieht noch so neu aus, als wenn es erst gekauft wäre; it still looks as new, as though it had just been bought. Die Schule geht erst um zehn Uhr an; the school does not begin before ten o'clock. Sie ist erst dreizehn Jahre alt; she is only thirteen years old.

II. Nächst (next) applied to time, denotes the period nearest at hand; künftig (future, next, coming) applies to future time, near or distant. Ex.: Ich hoffe in der nächsten Woche dieses Buch beendigen zu können; I hope to be able by (in the) next week to finish this book. Er wird in künftigen Jahren vorsichtiger sein; in coming years he will be more careful.

Exercise 96.

Besorgen, to conduct, manage, attend to, take care of;
Erst, (See I.)
Gelingen, to succeed, prosper, speed;
Geschäftig busy, busied, active;
Häuslich, domestic;
Himmlisch, heavenly, celestial;
Hinlänglich, sufficiently, enough;
Hinsetzen, to sit down;
Irrdisch, terrestrial, earthly, earthly;
Künftig, (See II.);
Lebensmittel, *pl.* victuals, provisions;
Unüberlegt, inconsiderate, rash;
Versorgen, to provide;
Vorbei, past, gone;
Zeitlich, temporal, earthly, timely;
Zugehen, (See above.)

So geht es in der Welt zu.	So the world goes.
Es geht seit vierzehn Tagen besser mit ihm.	For a fortnight past it goes better with him.
Erst über's Jahr kann es geschehen.	It can only take place a year hence.
Sie ist erst gestern angekommen.	She arrived only yesterday.
Niemand weiß, was der nächste Tag mit sich bringt.	No one knows what the (next day) morrow may bring with it.
Niemand weiß, was die nächsten Tage mit sich bringen.	No one knows what the next days may bring with them.
In dem künftigen Jahre besuche ich wahrscheinlich die Schweiz.	(In) the coming year I shall probably visit Switzerland.
Dies war die nächste Ursache seiner Abreise.	This was the immediate (nearest) cause of his departure.
Er hat den Auftrag besorgt.	He has attended to (done) the errand.
Er besorgt seine Geschäfte selbst.	He attends to (does) his business himself.
Man versorgte den Fremden mit Allem, was er nöthig hatte.	The stranger was provided (supplied) with all that he needed.

1. Erst nahm er Papier und Federn, dann setzte er sich hin zu schreiben. 2. Er hat eben erst angefangen zu arbeiten. 3. Es ist erst sieben Uhr vorbei. 4. Dieser Knabe ist erst dreizehn Jahre alt. 5. Nun ging es erst recht arg zu. 6. Es ist eine halbe Stunde weit bis zum nächsten Dorfe. 7. Dies ist der nächste Weg dahin. 8. Ich will ihm mit der nächsten Post schreiben. 9. Ein unüberlegtes Wort ist zuweilen die nächste Ursache zu Streit und Hader. 10. Mein Freund kommt die nächste Woche hierher. 11. Im künftigen Jahre gedenkt er nach Amerika zu reisen. 12. In künftigen Jahren werde ich vorsichtiger sein. 13. Künftige Woche gehe ich einige Tage auf's Land. 14. An das künftige Leben sollten wir mehr denken, als an das zeitliche. 15. Mein künftiges Leben soll dir gewidmet sein. 16. Ich befürchte, es wird auf diese Weise nicht gelingen 17. Er sorgt mehr für irdische als für himmlische Reichthümer. 18. Die geschäftige Frau besorgt alle häuslichen Arbeiten selbst. 19. Der Nachbar besorgte mir den Brief auf die Post. 20. Der Auftrag wurde von dem kleinen Knaben pünktlich besorgt. 21. Die Festung wurde hinlänglich mit Lebensmitteln versorgt. 22. Der Bruder versorgte mich zeitlich mit guten Büchern. 23. Der arme Mann hat sechs Kinder zu versorgen.

1. First I shall read, then I shall write. 2. I returned from my journey only yesterday. 3. I shall not see him till to-morrow. 4. I have received only half of my books. 5. We ought first to avoid doing evil, and then to do good. 6. Next spring I shall probably go into the country for a few days. 7. Are you sufficiently acquainted with the circumstances of his immediate departure? 8. That errand was punctually performed by this man. 9. This poor woman has five children to provide for. 10. I sometimes provide him with an instructive book. 11. Next time I shall be more careful.

Section XCIV.

Einholen (from ein, *in* and holen, to *fetch*) signifies to go to meet; to overtake; to outrun, &c.; as, eine Deputation holte den Gesandten ein; a deputation went out to meet the ambassador. Nach drei Tagen hatte unsere Fregatte das feindliche Schiff eingeholt; after three days our frigate had overtaken the hostile ship.

I. Heute, to-day (Latin, hodie,) is sometimes best rendered "at the present, now," &c.; as, heut zu Tage, or heutiges Tages; at the present day, now-a-days. Ex.: Unsere Sitten werden der Nachwelt einst eben so erscheinen, wie uns heut zu Tage die unsrer Vorfahren; our customs, one day, will appear to posterity just as (do) those of our ancestors to us, at the present day. Die Goldgier treibt heutiges Tages viele Tausende nach Californien; the immoderate desire for gold drives, at the present day, many thousands to California.

Exercise 97.

Ableiten, to turn off, derive;
Alarich, *m.* Alaric;
Angst, *f.* anxiety;
Begraben, to bury, inter;
Begriff, *m.* conception, notion, (im Begriff sein, to be on the point;
Busento, *m.* Busento, (river in Italy);
Einholen, (See above);
Erlernung, *f.* learning, acquisition;
Gesonnen sein, to be inclined, to intend;
Gothe, *m.* Goth;
Innig, heartfelt, hearty;
Leiten, to guide, lead, conduct;
Packen, to pack, pack up;
Richtplatz, *m.* place of execution;
Strömung, *f.* streaming, current, flood,
Verreisen, to go on a journey, travel, set out;
Zuvor, before;

Er wünschte mir eine angenehme Reise.	He wished me a pleasant journey.
Ich gedenke früherer Zeiten, und gedachte Ihrer oft während meiner Krankheit.	I remember former times, and thought of you often during my sickness.
Ich gedenke seinen Fleiß zu belohnen.	I intend to reward his diligence.
Er gedachte mir ein Leid zu thun.	He designed to do me an injury.
Ich bin nicht gesonnen darein zu willigen.	I do not intend to agree to it.
Ich packe meinen Koffer, weil ich gesonnen bin, in einigen Tagen eine Reise anzutreten.	I am packing my trunk, because I intend, in a few days, to go on a journey.
Er ist im Begriff nach Asien zu reisen.	He is on the point of going to Asia.
Gustav Adolph führte seine Schweden von Sieg zu Sieg und erkaufte den bei Lützen mit seinem Leben.	Gustavus Adolphus led his troops (Swedes) from victory to victory, and purchased the one at Lützen with his life.
Der Blitzableiter ist eine wichtige amerikanische Erfindung.	The lightning-rod is an important American invention.

1. Ich wünsche Ihnen einen guten Morgen. 2. Ich habe die Ehre, Ihnen einen guten Morgen zu wünschen. 3. Ich gedenke (Sect. 47). meiner Freunde mit inniger Liebe. 4. In den Zeiten des Glückes gedachte er seiner nicht, wohl aber in den Stunden der Angst und Noth. 5. Ich gedenke zu verreisen. 6. Ich gedenke bald wieder zu kommen. 7. Wir gedenken alle alt zu werden. 8. Ihr gedachtet es böse mit mir zu machen. 9. Der Vater ist gesonnen darein zu willigen. 10. Ich war nicht gesonnen dahin zu gehen. 11. Ich packe meinen Koffer, weil ich gesonnen bin, in den ersten Tagen zu verreisen. 12. Ich stehe im Begriffe abzureisen. 13. Ich bin im Begriffe auszugehen. 14. Man führt den Verbrecher zum Richtplatze. 15. Der Sohn des Herzogs führte die Truppen selbst zum Sturme. 16. Er führte sie zum Angriffe. 17. Rußland führte Krieg mit Polen. 18. Der Kaufmann führt Waaren zum Markte. 19. Ein kleines Kind leitete den blinden Mann. 20. Alarich wurde von den Gothen in dem Busento begraben, nachdem sie zuvor die Strömung abgeleitet hatten. 21. Er leitet einen Jeden nach seinem Rath. 22. Wer sich nicht von der Vernunft leiten läßt, der läuft Gefahr, daß ihn seine Leidenschaften in's Verderben führen. 23. Der fleißige Schüler holte seine Cameraden bei der Erlernung der englischen Sprache noch ein, obgleich sie beinahe vier Wochen eher angefangen hatten, dieselbe zu lernen. 24. Wir holten die Freunde auf ihrem Wege noch ein, obgleich sie eine halbe Stunde früher fortgegangen waren. 25. Heut zu Tage erreichen die Menschen kein so hohes Alter mehr, als in früheren Zeiten. 26. Man hört heut zu Tage von nichts Anderm sprechen, als von Krieg. 27. Man hört heutiges Tages viel klagen über schlechte Zeiten.

1. I wish you a good evening. 2 I have the pleasure to wish you a good morning. 3. When in foreign countries, we often remember with affection our friends at home. 4. I intend to go next month to the continent. 5. Do you intend to remain long there? 6. No, I do not intend to remain long there, I shall soon return. 7. He tried to over take his friend in learning the German language, but he could not, as his friend was too far advanced. 8. Do you intend to overtake your brother on his journey? 9. I overtook my brother after three days' journey. 10. Six months ago I was on the point of going to America; but now I am very glad that I remained at home.

LESSONS IN MUSIC.—No. XVII.

By John Curwen.

We propose to collect together in this lesson a large amount of information on the subjects of the different kinds of voices,—singing in "parts,"—and good enunciation. We must refer our readers for fuller information on these topics, to Müller's Physiology, Book IV., Section 3,—the articles "Larynx," "Voice," and "Stammering," in the "Penny Cyclopædia,"—Sir Charles Bell's article on the voice in the "Philosophical Transactions" for the year 1832, Dr. Rush's great work (American) on the "Philosophy of the Human Voice," and Crevelli's "Art of Singing."

The chief instrument of voice is the larynx, which we may feel, with the hand outside, as a little lump, in the upper part of our throats, moving with almost every utterance of voice. It is a small box placed at the top of the trachea or windpipe. Its walls are of cartilage or gristle. Its upper opening is protected by a little valve, called the epiglottis, which falls back upon it in every act of swallowing,—and *at the lower opening are two elastic membranes, one depending from each side*, which can be stretched to any degree of tension required, and can be made to meet each other (closing the lower opening) through their whole length, or through any part of it. Various muscles, attached to the walls of the larnyx, in obedience to nervous action and the mind's will, regulate these movements.

These elastic membranes, sometimes called the vocal chords, are the source of voice. During ordinary breathing they rest, relaxed, against the walls of the larynx, but, in the production of voice, they are brought into such a position as to vibrate freely in the air, as it ascends from the lungs (much like the tongue of any reed-instrument), and this vibration makes the breath vocal.

The voice of one individual differs from that of others in Pitch,—in quality or Timbre, as the French call it,—and in power or Strength.

The Pitch of a sound depends on the degree of *tension* given to the vocal membranes, and on the *length* of the parts which are left free to vibrate,—just as in the harp, violin, and guitar. It is also affected by the *force* of the air-current, as is common in reed-instruments. It may be noticed that the larynx rises for the production of high notes, to adapt the column of air above it to the pitch of the vibrating tongue, as is necessary in regulating the length of the various reed-organ-pipes. [This raising of the larynx for the high notes seems to be the plan into which we most naturally fall, but the teaching of Herr Kroff, to which we chiefly referred in our lesson in No. 11. Vol. i., and which certainly has produced marvellous results, appears to indicate that the production of voice, *without* this adjustment of the column of air and

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employment of the muscles of the throat *above* the larynx is attended with far less fatigue, and far greater purity of tone. *Why* this is the case we cannot at present explain.] Hence in females and boys, whose voices are naturally higher than those of men, the larynx is placed *higher in the throat*, and is also smaller, so as to make the vibrating membranes *shorter*. When a voice "*breaks*," the larynx gradually takes a lower place in the throat, and also enlarges in size, so that the voice necessarily becomes deeper. Müller states that the vocal membrane in the male is half as long again as in the female—as three to two. To produce a given note (say D below the staff) the male voice, especially if a bass, would require strong tension of the vocal membranes, but the female voice would produce the same note with very little tension, because its vocal membranes are shorter.

THE TIMBRE, or *Quality* of a note—(which is so different in different individuals) depends on the quality and resonance of the fleshy material of which the organ is composed, much as the sounds of a musical box differ according to the substance on which the box may be placed, and as the "timbre" of a violin is said to depend on the form and quality of the wood as well as on the nature of its strings. The quality of voice is also much affected by the form of the air passages above the larynx. Thus we are sometimes able to imitate the voice of others, not only in reference to its peculiarities of pitch and inflection, by movements of the larynx, but even in its "timbre" by certain conformations of the mouth.

The general STRENGTH of a voice appears to depend upon the vibrating power of the vocal membranes, the size of the organ, and the capacity of the chest. We know how easily a slight inflammation or other affection of the mucous membrane lining the larynx weakens the voice. The voices of old persons are made tremulous by the loss of nervous and muscular power.

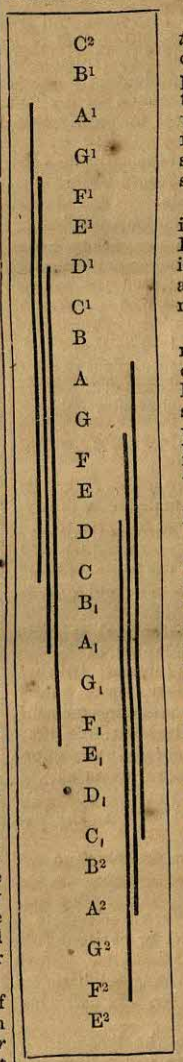
The special FORCE or *loudness* given to an accented note may be occasioned, Müller thinks, by relaxing the tension of the vocal membranes while we increase the force of the air-current. Sir Charles Bell speaks of the back of the mouth and the veil of the palate (the soft palate) as playing a most important part in giving the delicate impulses of accent.

Good MODULATION or correct *tune* requires a *mental* effort. "Man," says Müller, "like the singing bird, learns unconsciously the different internal changes in the state of the larynx, and the different muscular actions necessary for each note. Sounds accidentally uttered, and the muscular actions which accompany them, become associated in the sensorium, and afterwards readily excite each other when a melody is to be imitated." Correct tune, therefore, depends upon the skill with which the sound is perceived and its "idea" retained, and upon the accuracy with which the mind can *command* and *combine* the various muscular movements necessary for its production. Hence it may be easily understood how the voice will *flatten*, when, from inattention or weariness, the singer does not give prompt and firm tension to the proper muscles of the larynx or chest. The *loud* singer is especially liable to this, because, as noticed above, his notes are made to depend less upon the easily-governed tension of the vocal chords, and more upon the regulated force of air from the chest—the muscles of which are sooner wearied and less easily commanded with accuracy. Hence, the importance of cultivating a *medium force of voice*, such as is consistent with the *easy* action of the lungs.

The FALSETTO voice, in men, is produced, as Müller shows, by the vibration of the thin borders only of the vocal membranes, while, for the natural voice, they vibrate in their whole breadth. At a certain high degree of tension, the falsetto only can be produced. There is a more moderate tension of the membranes at which a soft breath will produce the falsetto, and a stronger breath the natural voice. And at a still lower degree of tension, the natural voice only can be produced.

The term REGISTER is used to denote "a certain number of sounds in a voice, which differ in quality or timbre from another number of sounds in the same voice." The *lower* register usually contains about five, and the *upper* about eight notes of the voice. Most of the Italian authorities distinguish a *third* register in the *highest* sounds of the voice. We follow Dr. Bennati—as kindly quoted to us by Mr. Graham. This change of register is probably occasioned by some difference in the *manner* in which the notes are produced. It may be that the lower notes are successively produced by somewhat relaxed membranes, which are shortened as the notes rise, and that notes of the higher register are produced mainly by the tension of the membranes without any shortening of the chords. If so, there will be a note or two, at the junction of the registers, which may be produced on either principle, and an uncultivated voice may not decide with sufficient promptitude which principle is to be used, or on which note the new register should begin. This would account for the great difficulty, which many have, in making the notes of one register follow smoothly with those of the other. Such persons require considerable practice and care to "*blend*" the registers. They should be instructed to keep the notes of the lower register down in strength or force, while they seek to strengthen those of the higher one.

THE VOICES OF WOMEN AND CHILDREN are, on an average, about eight notes higher than those of men. They are very various in character, but may be conveniently classified according to their "*compass*" or the extent of notes which they can reach on the *standard scale*.



a. The First Soprano Voice has its *extremest* compass from E² (above the staff) down to B♭ (below the staff). Its *easy* compass is from A¹ down to C. "It is weak in the lower sounds, but light and brilliant (if well developed) in the higher ones above B. The organ has not much muscular strength, and cannot easily give effect to sustained sounds," but is very flexible.

b. The Second Soprano Voice reaches, in its extreme compass, from C² down to G♭. Its easy compas is from F¹ down to A♭. "It is generally full and round in its quality, and flexible. The organ is of a stronger muscular construction."

c. The Contra-Alto Voice sometimes reaches from B¹ flat down to E♭. Its easy compass is from D¹ to F♭. "Its organ is" large and "of a very strong muscular construction. It is not very flexible. The upper sounds are harsh or weak. It is, however, sometimes full from D¹ down to G. It is most powerful from G to G♭."

THE VOICES OF MEN are classified as follows:—

a. The Tenor Voice is of two sorts. "The first is that very delicate, light, and rare voice for which the 'alto' part is written in some of our tune-books. Like the first soprano voice, among females, it is not adapted to sustained sounds. Its compass is about a tone higher than that of the common tenor voice." The stronger tenor voice has for its extreme compass from B flat down to B♭ flat (in the bass cleff). Its easy compass is from A down to C♭. "It is full, round, and capable of sustaining and expanding sounds with firmness. Great care should be taken not to force the higher sounds. They should be sustained firmly though lightly, and without making use of *falsetto*—a quality of voice dissonant and unpleasant, and which ought never to exist in a well-cultivated voice."

b. The Baritone Voice has its extreme compass from G down to F♯ sharp (below the bass cleff). Its easy compass is from F down to A². "It partakes in some degree of the quality of both bass and tenor. It is more soft and flexible than the former. From the ease with which it takes the notes D E F (treble cleff), it may sometimes be mistaken for the tenor. But from the different position of the

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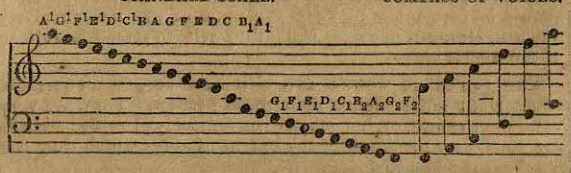
organ in the throat, these sounds, instead of being full, will be of a hollow quality—being the extreme sounds of the baritone, whilst they are in the middle and fullest part of the tenor. If the voice is at all strained on this part, instead of gaining the soft and full baritone quality, it will become an imperfect mixture of the baritone and tenor."

c. The Bass Voice reaches its extreme sounds in E (on the lowest line of the treble cleff) and E (below the bass cleff). Its easy compass is from D down to F_2. "It is naturally of a hard and inflexible quality, but very full and powerful in sustaining sounds."

Those who understand the old notation will like to see the following diagram:—

STANDARD SCALE. COMPASS OF VOICES.



The statement of the extreme compass of voices, and the remarks included between inverted commas, are either condensed or extracted from the "Art of Singing," by D. Crevelli, a work which is "the result of study and experience, for nearly thirty years" of a gentleman, who is spoken of by the "Athenæum" as "the most successful vocal teacher in England."

It should be noticed that boys' voices, especially for some time before they begin to break, are of a different timbre from those of girls, are heavier and less flexible. They should, as much as possible, be employed in singing "seconds."

The voices of women and children are commonly called "treble voices." The highest female voice is often called simply "soprano," and the second voice is then called the "mezzo soprano." The "part" adapted to the second soprano or contra-alto is sometimes called the "*seconds*," but that term is occasionally used in reference to the tenor! The "alto" is a very high man's voice, reaching very nearly to the lowest of women's voices, which is called, on that account, the contra-alto. But the two voices differ greatly in character—the one being light and flexible, the other not so.

Every pupil should mark the extent of his own voice on the scale above given at the side of the page.

The pupils need scarcely be warned against the common foolishness of boasting "how *high* they can sing." Let them remember that God has *made* their voices differently, that it is the honour of some to sing the lower parts for which their voices were made, as it is of others to sing the higher parts—that and the *medium* sounds of every voice are not only its easiest, but its *very best*.

Vocal music is commonly so written that several melodies may be sung together—each melody being adapted, in its compass, to one particular voice. The leading (or most striking) melody is almost invariably, and very properly, that which is sung by the highest voice. Each of these concurring melodies is called a "part:"—the highest is called the "air."

Those who sing in parts should seek to *attune* their voices one to the other, and to maintain the several parts with an *equal volume* of voice, so that one part may not overpower the others. Each singer should also take care to sing the part proper to his own voice.

We have music "in two parts," written for soprano and contra-alto voices, or for tenor and bass (like the exercises in this work), or for soprano and bass,—music "in three parts" written "for three equal voices" (that is, for three female or three male voices), or for soprano, contra-alto, or baritone (like "School Music"), or for soprano, tenor, and bass, &c.—music "in four parts" for soprano, contra-alto, tenor, and bass, &c. (like most psalm tunes),—also music in five, six, and eight parts.

There is no harmony more perfect than the "concord of sweet voices." "All musicians knew," says Col. Thompson, "that by practising together, and, as it were, mutually rubbing down each other's asperities and defects, a quartett of performers on instruments of the viol kind arrived at a perfection of execution in point of harmony, or what is popularly called 'being in tune,' which nothing could excel, and no known thing, *except a quartett of singers*, equal. In short, there was no doubt that by following the directions of the ear as to what was most harmonious, and each labouring to accommodate the other with this common object in view, they did practically break in upon the thing so much sought for under the title of correct harmony. * * * But nobody could tell what it was they did." The Colonel then shows that the thing they did was—to sing or play notes which were mathematically correct according to the scale which the human ear requires—to free themselves from the temperament of keyed instruments—and to observe that double form of TE and RAY which he calls "the duplicity of the dissonances." Let the singer make full use of the advantage he thus possesses.

The "balancing" of parts is important. For a congregation containing every kind of voice, music in four parts, soprano, contra-alto, tenor, and bass, is most appropriate. The second soprano and the baritone voices, in such music, would have to join with the parts above or below according to convenience. But in the Sabbath-school, where the immense preponderance of voice is that of females and children, to divide the voice of the male teachers into bass and tenor would make them out of all proportion weak. A far better distribution and more equal volume of voice is obtained by using music written for three parts—two for the voices of females and children, and one (of medium compass) for the united voices of the men—as in "School Music." A similar proportion is desirable for boys' schools with a master, but the parts should be so written that the two upper melodies may be harmonious when the bass is absent. In girls' schools music in two parts is desirable.

After these explanations, it is scarcely necessary to warn the pupil against the too common but absurd practice of females attempting to sing the tenor, or that of males sullying, with their tenor or baritone voices, the purity and brightness of the "air." If men are obliged to *pitch* the air of a tune, let them do so; but let them leave the females "to *sing* it while they return to the part which is proper to their own voices."

In "*leading*" a tune it is advisable first to let all the school or congregation distinctly hear the key-note. If necessary, the first note or two (not more) may be sung by the leader in the "air." The leader should then take his own part. He will find himself able to keep up the *pitch* or the *rate of movement* much better by means of a *firm bass* or a *clear tenor*, both well accented, than by singing the air however loudly or however angrily. When a "clerk" or "precentor" *will* sing the "air," it takes the spirit from the female voices: but if, perchance, for a line, he leaves them to themselves, they seem to rise with new vigour, sweetness, and brilliancy.

A good enunciation of words is most important to the singer. He cannot use that accent and inflection on each word which so much help us to distinguish the words of the *speaker*, however badly uttered. It is therefore the more necessary for the singer, if he would be "intelligible and edifying," to use an articulation strong, distinct, and correct.

Care should be taken to make the *vowel* sounds most *clear* and *accurate*, and to deliver the *consonants* both *quickly* and *forcibly*.

For this purpose, the words should be read aloud by the teacher, so as to show the feeling and proper expression belonging to them, and to exhibit a "pattern" of good utterance. This the class should imitate, in one voice, taking the teacher's pattern line by line. The practice of reading together in a loud whisper will be found very conducive to the end sought.

It will sometimes be convenient to shorten a note when it falls on an ill-sounding syllable, and sometimes to throw the sound of a final consonant on to the following word.

If we were to pursue this important subject further, we should be tempted into a course of lessons on elocution, which would be beyond our province here.

(The Exercises attached to this Lesson will be given in our next.)

SKELETON MAPS.—No. II.

(*Continued from page* 12.)

Names of Places.	Latitudes.	Longitudes.
Cleves, Germany	51° 48′ N.	6° 7′ E.
Coblentz, Germany	50 22	7 38
Cobourg, Germany	50 15	10 58
Coimbra, Portugal	40 13	8 24 W.
Colchester, England	51 53	0 54 E.
Cologne, Germany	50 55	6 55
Como, Italy	45 48	9 6
Constance, Germany	47 36	9 8
Constantinople, Turkey	41 1	28 55
Copenhagen, Denmark	55 41	12 36
Corfu I., Mediterranean	39 38	19 56
Corinth, Greece	37 58	23 28
Cork, Ireland	51 52	8 17 W.
Coron, Greece	36 47	21 59 E.
Courtray, Belgium	50 50	3 16
Coutances, France	49 3	1 26 W.
Coventry, England	52 24	1 30
Cracow, Gallicia	50 4	19 57 E.
Cremona, Italy	45 8	10 2
Cronstadt, Russia	59 59	29 50
Cuxhaven, Germany	53 52	8 43
Dago, Baltic	58 50	22 40
Dantzic, Prussia	54 21	18 38
Darmstadt, Germany	49 56	8 35
Daventry, England	52 16	1 9 W.
Deal Castle, England	51 13	1 24 E.
Delft, Holland	52 1	4 22
Derby, England	52 56	1 28 W.
Dieppe, France	49 56	1 4 E.
Dijon, France	47 19	5 2
Dixmude, Belgium	51 2	2 52
Dorchester, England	50 43	2 26 W.
Dordrecht, Holland	51 49	4 40 E.
Dorpat, Russia	58 23	26 42
Dover Castle, England	51 8	1 19
Dresden, Germany	51 3	13 43
Drontheim, Norway	63 26	10 23
Dublin, Ireland	53 23	6 21 W.
Dundee, Scotland,	56 28	2 56
Dunkirk, France	51 2	2 23 E.
Durazzo, Turkey	41 20	19 27
Durham, England	54 47	1 34 W.
Dusseldorf, Germany	51 14	6 46 E.
Eddystone Lt., England	50 11	4 15 W
Edinburgh, Scotland	55 57	3 11
Eisenach, Germany	50 59	10 20 E.
Elba I., Mediterranean	42 49	10 20
Elbing, Prussia	54 8	19 22
Elsinore, Denmark	56 2	12 38
Ely, England	52 25	0 17 E.
Emden, Germany	53 22	7 11
Enkhuysen, Holland	52 42	5 18
Erfurth, Germany	50 59	11 2
Escurial, Spain	40 36	4 8 W.
Evreux, France	48 56	1 9 E.
Exeter, England	50 43	3 31 W.
Faro, Portugal	36 59	7 51
Faroe Is., Atlantic	62 0	7 0
Ferrara, Italy	44 50	11 36 E.
Ferrol, Spain	43 29	8 15 W
Finisterre, Cape, Spain	42 54	9 16
Fiume, Illyria	45 20	14 26 E.
Flensborg, Denmark	54 47	9 28
Florence, Italy	43 47	11 16
Flushing, Holland	51 27	3 35
Folkstone, England	51 5	1 11
Fontarabia, Spain	43 22	1 47 W.
Foreland N., England	51 23	1 27 E.
Foreland S., England	51 8	1 22
Frankfort (Maine), Germany	50 7	8 36
Frankfort (Oder), Germany	52 22	14 33
Frejus, France	43 26	6 44
Fulda, Germany	50 34	9 44
Gall, St., Switzerland	47 26	9 22
Gallipoli, Turkey	40 26	26 38
Gap, France	44 34	6 4
Gata, Cape, Spain	36 44	2 13 W.
Gefle, Sweden	60 40	17 9 E.

Names of Places.	Latitudes.	Longitudes.
Geneva, Switzerland	46° 12′	6° 10′
Genoa, Italy	44 25	8 58
Ghent, Belgium	51 3	3 44
Gibraltar, Spain	36 7	5 22 W.
Girgenti, Sicily	37 18	13 31 E.
Glasgow, Scotland	55 52	4 16 W.
Glastonbury, England	51 9	2 41
Gloucester, England	51 52	2 14
Gluckow, Russia	51 41	34 20 E.
Glückstadt, Germany	53 48	9 27
Gotha, Germany	50 56	10 44
Gothland I., Baltic	57 50	18 0
Gottenburg, Sweden	57 42	11 58
Gottingen, Germany	51 32	9 57
Gouda, Holland	52 0	4 42
Gradisca, Italy	45 54	13 25
Gratz, Germany	47 4	15 27
Gravelines, France	50 59	2 8
Greenwich, England	51 29	0 0
Grenoble, France	45 11	5 44
Grodno, Russia	53 41	23 50
Guastalla, Italy	44 55	10 40
Gueldres, Germany	51 31	6 19
Hague, Holland	52 5	4 19
Halberstadt, Germany	51 54	11 4
Halle, Germany	51 29	11 58
Halmstadt, Sweden	56 40	12 52
Hamburg, Germany	53 33	9 59
Hammerfest, Norway	70 38	23 44
Hanover, Germany	52 22	9 43
Haarlem, Holland	52 23	4 38
Harlingen, Holland	53 10	5 25
Hartlepool, England	54 42	1 11 W.
Havre de Grace, France	49 29	0 7 E.
Heligoland, North Sea	54 12	7 53
Helsingborg, Sweden	56 3	12 43
Helsingfors, Russia	60 10	25 0
Helvoetsluys, Holland	51 49	3 28
Heraclea, Turkey	41 1	27 55
Herenthals, Belgium	51 11	4 50
Hernosand I., Sweden	62 38	17 53
Hola, Iceland	65 44	19 44 W.
Holy Is., England	55 40	1 47
Holyhead, Wales	53 19	4 39
Horsham, England	51 4	0 20
Huntingdon, England	52 20	0 11
Hieres, France	43 7	6 8 E.
Iglau, Germany	49 23	15 36
Ilchester, England	51 0	2 40 W.
Ingolstadt, Germany	48 46	11 26 E.
Innspruck, Germany	47 16	11 24
Ismail, Turkey	45 21	28 50
Ivica I. Mediterranean	38 53	1 29
Jaroslaw, Russia	57 38	40 10
Jassy, Moldavia	47 9	27 30
Jersey I., British Channel	49 13	2 10 W.
Johannisberg, Prussia	53 38	21 49 E.
Kaminiec, Russia	48 41	27 1
Kasan, Russia	55 48	49 21
Kaskon, Russia	62 22	21 11
Kertch, Crimea	45 21	36 21
Kidwelly, Wales	51 44	4 17 W.
Kiel, Germany	54 20	10 8 E.
Kinsale, Ireland	51 42	8 25 W.
Kiow, Russia	50 27	30 28 E.
Klin, Russia	56 20	36 48
Koenigsburg, Prussia	54 42	20 29
Kola, Russia	68 53	33 1
Koluga, Russia	54 30	36 5
Koslof, Russia	45 12	33 23
Kostroma, Russia	57 46	41 13
Krageroe, Norway	58 52	9 31
Krems, Germany	48 22	15 36
Kursk, Russia	51 44	36 28
Lagos, Portugal	37 6	8 38 W.
Lancaster, England	54 3	2 48
Landsberg, Germany	48 3	10 54 E.
Landscroon, Sweden	55 52	12 51
Langres, France	47 52	5 20
Laon, France	49 34	3 27
Laubach, Germany	46 2	14 46
Launceston, England	50 38	4 21 W.

Names of Places.	Latitudes.	Longitudes.
Leasowes, England	53° 25′	3° 7′
Leghorn, Italy	43 33	10 17 E.
Leipsic, Germany	51 20	12 22
Le Mans, France	48 1	0 12
Leon Is., Spain	36 28	6 12 W.
Le Puy, France	45 3	3 54 E.
Leyden, Holland	52 10	4 29
Libau, Courland	56 32	20 55
Lichtenau, Germany	51 37	8 54
Liege, Belgium	50 39	5 32
Lilienthal, Germany	53 9	8 54
Limoges, France	45 50	1 15
Lincoln, England	53 14	0 32 W.
Lindesnæs, Norway	57 58	7 3 E.
Lintz, Germany	48 19	14 17
Lipari Is., Mediterranean	38 29	14 56
Lisbon, Portugal	38 42	9 9 W.
Litchfield, England	52 41	1 49
Liverpool, England	53 25	2 59
Lizard Point, England	49 58	5 11
Lodi, Italy	45 19	9 31 E.
London, England	51 31	0 6 W.
Londonderry, Ireland	54 59	7 15
Loretto, Italy	43 27	13 35 E.
L'Orient, France	47 45	3 21 W.
Loughborough, England	52 47	1 12
Louvain, Belgium	50 53	4 42 E.
Lowestoff, England	52 29	1 46
Lubeck, Germany	53 51	10 41
Lugano, Italy	46 0	8 58
Lunde, Norway	58 27	6 36
Lundy I., England	51 10	4 39 W.
Lutterworth, England	52 27	1 12
Luxemburg, Germany	49 38	6 10 E.
Lynn, England	52 47	0 25
Lyons, France	45 46	4 49
Macon, France	46 18	4 50
Madrid, Spain	40 25	3 42 W.
Maestricht, Holland	50 51	5 41 E.
Magdeburg, Germany	52 8	11 39
Mahon, Minorca	39 51	4 18
Malaga, Spain	36 44	4 25 W.
Malines, Belgium	51 2	4 29 E.
Malmo, Sweden	55 37	13 1
Malo, St., France	48 39	2 1 W.
Manchester, England	53 29	2 14
Manheim, Germany	49 29	8 28 E.
Mantua, Italy	45 9	10 48
Marburg, Austria	46 35	15 43
Marienburg, Prussia	54 2	19 2
Markoe I., Norway	57 59	6 59
Marseilles, France	43 18	5 22
Martin, St., Scilly Isles	49 58	6 15 W.
Mary, Cape St., Italy	39 48	18 23 E.
Matapan, Cape, Greece	36 23	22 30
Mataro, Spain	41 32	2 27
May I., Scotland	56 11	2 33 W.
Meaux, France	48 58	2 53 E.
Meiningen, Germany	50 35	10 24
Memel, Prussia	55 42	21 8
Messina, Sicily	38 12	15 36
Metz, France	49 7	6 10
Middleburg, Holland	51 30	3 38
Milan, Italy	45 28	9 11
Milo I., Archipelago	36 43	24 14
Mittau, Russia	56 39	23 43
Modena, Italy	44 38	10 57
Mohilew, Russia	53 54	30 25
Mondego, Cape, Portugal	40 12	8 54 W.
Montauban, France	44 1	1 21 E.
Montpelier, France	43 36	3 53
Moscow, Russia	55 46	37 33
Mosdok, Russia	43 44	43 50
Munich, Germany	48 8	11 35
Munster, Germany	51 58	7 36
Namur, Belgium	50 29	4 51
Nancy, France	48 42	6 11
Nantes, France	47 13	1 33 W.
Naples, Italy	40 50	14 16 E.
Narbonne, France	43 11	3 0
Narva, Russia	59 23	28 15
Needles Lt., England	50 40	1 34 W.

Names of Places.	Latitudes.	Longitudes.
Negropont, Archipelago	38° 28′	23° 34′ E.
Neustadt, Germany	47 48	16 14 E.
Nevers, France	46 59	3 10
Newark, England	53 5	0 49 W
Newbury, England	51 24	1 19
Nice, Italy	43 41	7 17 E.
Nieuport, Belgium	51 8	2 45
Nimeguen, Holland	51 51	5 51
Nismes, France	43 50	4 22
Nisnei Novgorod, Russia	56 20	44 29
Nisnei Oudinsk, Russia	54 55	99 2
Noirmoutier I., France	47 0	2 14 W.
Norkoping, Sweden	58 35	16 11 E.
North Cape, Lapland	71 10	26 1
Nottingham, England	52 57	1 8 W.
Novara, Italy	45 27	8 38 E.
Novogorod, Russia	58 32	31 16
Nuremberg, Germany	49 27	11 4
Oczakow, Russia	46 37	31 26
Odessa, Russia	46 30	30 45
Oerebro, Sweden	59 17	15 13
Oldenburg, Germany	53 9	8 15
Oleron, France	43 11	0 36
Omer, St., France	50 45	2 15
Onega, Russia	63 55	38 5
Oporto, Portugal	41 9	8 37 W.
Orel, Russia	52 57	35 57 E.
Orford Lt., England	52 5	1 34
Orleans, France	47 54	1 55
Ortegal, Cape, Spain	43 47	7 49 W.
Osnaburg, Germany	52 17	8 1 E.
Ostend, Belgium	51 14	2 55
Otranto, Italy	40 9	18 29
Oxford, England	51 46	1 15 W.
Paderborn, Germany	51 44	8 44 E.
Padua, Italy	45 24	11 52
Palermo, Sicily	38 7	13 22
Palma, Majorca	39 34	2 39
Pamplona, Spain	42 50	1 41 W
Paris, France	48 50	2 20 E.
Parma, Italy	44 48	10 27
Paros I., Archipelago	37 4	25 11
Pavia, Italy	45 11	9 10
Peniscola, Spain	40 23	0 30
Penrith B., England	54 41	2 44 W.
Perekop, Crimea	46 9	33 42 E.
Perigueux, France	45 11	0 44
Perm, Russia	58 1	56 27
Perpignan, France	42 42	2 54
Pesaro, Italy	43 55	12 54
Peterborough, England	52 36	0 15 W.
Petersburg, Russia	59 56	30 19 E.
Piacenza, Italy	45 3	9 43
Pillau, Prussia	54 34	19 53
Pilsen, Austria	49 45	13 23
Piombino, Italy	42 55	10 31
Pisa, Italy	43 43	10 24
Plymouth, England	50 22	4 7 W.
Poictiers, France	46 35	0 21 E.
Pola, Istria	44 52	13 50
Polotsk, Russia	55 29	28 48
Poole, England	50 43	1 59 W.
Portland, Lt., England	50 31	2 27
Porto-Vecchio, Corsica	41 35	9 17 E.
Portsmouth, England	50 48	1 6 W.
Prague, Germany	50 5	14 25 E.
Presburg, Hungary	48 8	17 11
Quimper, France	47 58	4 6 W.
Quentin, St., France	49 51	3 17 E.
Ramsey I., Wales	51 52	5 20 W.
Ratisbon, Germany	49 1	12 5 E.
Ravenna, Italy	44 25	12 11 E.
Rendsburg, Denmark	54 19	9 40
Rennes, France	48 7	1 41 W.
Revel, Russia	59 27	24 35 E.
Rhé I., France	46 15	1 33 W.
Rheims, France	49 15	4 3 E.
Rhodes I., Archipelago	36 26	28 15
Riga, Russia	56 57	24 8
Rimini, Italy	44 4	12 33
Rochefort, France	45 56	0 58 W.
Rochelle, France	46 9	1 10
Rodosto, Turkey	40 59	27 26 E.

Names of Places.	Latitudes.	Longitudes.
Rome, Italy	41° 54′	12° 30′
Rondoe I., Norway	62 25	5 36
Rotterdam, Holland	51 55	4 29
Rouen, France	49 26	1 6
Rugen I., Sweden	54 25	13 30
Ruremonde, Holland	51 12	5 59
Rypen, Denmark	55 20	8 47
Saintes, France	45 45	0 38 W.
Salisbury, England	51 4	1 47
Salonica, Turkey	48 38	22 56 E.
Saltzburg, Germany	47 48	13 1
Santander, Spain	43 28	3 41 W.
Saratov, Russia	51 31	46 0 E.
Sark I., English Channel	49 23	2 25 W.
Schiedam, Holland	51 55	4 24 E.
Schmalkalden, Germany	50 45	10 26
Schweidnitz, Germany	50 51	16 27
Sebastian, St., Spain	43 20	1 59 W.
Setuval, Portugal	38 29	8 54
Sheerness, England	51 11	0 44 E.
Shrewsbury, England	52 42	2 45 W.
Sienna, Italy	43 22	11 10 E.
Simpheropol, Crimea	44 58	34 9
Skagen, Cape, Denmark	57 44	10 38
Sleswick, Denmark	54 31	9 34
Sonderburg, Denmark	54 55	9 47
Sonderhausen, Germany	51 23	10 50
Southampton, England	50 54	1 24 W.
Spartivento, Cape, Italy	37 56	16 4 E.
Specia, Italy	44 4	9 51
Spire, Germany	49 19	8 26
Spoletta, Italy	42 45	12 36
Stade, Germany	53 37	9 28
Staples Lt., England	55 38	1 37 W.
Start Point, England	50 13	3 38
Stavanger, Norway	58 59	5 45 E.
Stockholm, Sweden	59 21	18 4
Stolberg, Germany	51 35	10 57
Strabane, Ireland	54 49	7 23 W.
Stralsund, Germany	54 19	13 32 E.
Strasburg, France	48 35	7 45
Stromboli I., Mediterranean	38 48	15 13
Stromness, Orkneys	58 56	3 31 W.
Stuttgard, Germany	48 46	9 11 E.
Sunderland, England	54 55	1 21 W.
Swansea, Wales	51 37	3 56
Syracuse, Sicily	37 3	15 16 E.
Taganrog, Russia	47 13	38 39
Tambow, Russia	52 44	41 45
Tarifa I., Spain	36 1	5 35 W.
Tarragona, Spain	41 9	1 16 E.
Taunton, England	51 1	3 5 W.
Teklenburg, Germany	52 13	7 47 E.
Tenby, Wales	51 40	4 41 W.
Tenedos I., Archipelago	39 51	25 53 E.
Terracina, Italy	41 18	13 13
Terra Nova, Sicily	37 3	14 16
Tornea, Sweden	65 51	24 12
Tortona, Italy	44 53	8 57
Tortosa, Spain	40 49	0 33
Toulon, France	43 7	5 56
Toulouse, France	43 36	1 27
Tournay, Belgium	50 36	3 23
Tours, France	47 24	0 42
Trafalgar, Cape, Spain	36 10	6 0 W.
Trapani, Sicily	38 3	12 30 E.
Trent, Germany	46 6	11 4
Treves, Germany	49 47	6 38
Trieste, Illyria	45 38	13 47
Tripolitza, Morea	37 30	22 30
Troyes, France	48 18	4 5
Tscherkask, Russia	47 14	39 23
Tubingen, Germany	48 31	9 4
Tula, Russia	54 12	37 1
Tunbridge, England	51 12	0 17
Turin, Italy	45 4	7 40
Twer, Russia	56 52	35 57
Tynemouth, England	55 1	1 25 W.
Udine, Italy	46 3	13 15 E.
Ulm, Germany	48 23	9 59
Umea, Sweden	66 4	20 23
Upsal, Sweden	59 52	17 39
Uraniburg, Denmark	55 55	12 43

Names of Places.	Latitudes.	Longitudes.
Urbino, Italy	43° 44′	12° 37′
Ushant I., France	48 28	5 3 W.
Utrecht, Holland	52 6	5 7 E.
Valentia, Spain	39 29	0 23 W.
Valetta, Malta	35 53	14 31 E.
Valona, Turkey	40 28	19 26
Vannes, France	47 39	2 45 W.
Venice, Italy	45 26	12 21 E.
Venloo, Germany	51 22	6 11
Verden, Germany	52 56	9 13
Verdun, France	49 10	5 22
Verona, Italy	45 26	11 1
Versailles, France	48 48	2 7
Vicenza, Italy	45 32	11 33
Vienna, Austria	48 13	16 23
Vigo, Spain	42 13	8 34 W.
Villach, Germany	46 35	13 52 E.
Villalpando, Spain	41 51	5 24 W.
Vincent, Cape St., Portugal	37 3	9 0 W.
Viviers, France	44 29	4 41 E.
Vologda, Russia	59 14	40 11
Voronetz, Russia	51 41	39 22
Wakefield, England	53 41	1 29 W.
Waldeck, Prussia	51 13	9 2 E.
Wardhuus, Lapland	70 23	31 7
Warrington, England	53 24	2 33 W.
Warsaw, Poland	52 14	21 3 E.
Weimar, Germany	50 59	11 21
Wesel, Germany	51 39	6 37
Whitehaven, England	54 33	3 35 W.
Wiborg, Denmark	56 27	9 26 E.
Wiborg, Russia	60 43	28 46
Wicklow, Ireland	52 58	6 0 W.
Wilna, Russia	54 41	25 18 E.
Winchester, England	51 4	1 18 W.
Windsor, England	51 29	0 35
Wittenberg, Germany	51 53	12 46 E.
Wolfenbuttle, Germany	52 9	10 32
Wolverhampton, England	52 35	2 7 W.
Workington, England	54 39	3 34
Worms, Germany	40 38	8 21 E.
Wurtzburg, Germany	49 46	9 56
York, England	53 58	1 5 W.
Ypres, Belgium	50 51	2 53 E.
Zante I., Mediterranean	37 47	20 55
Zurich, Switzerland	47 23	8 32
Zutphen, Holland	52 8	6 12

In our last number we added to the Skeleton Map two important and useful scales; the one is a scale of latitudes by which all the places in the preceding list may be laid down on the Map of Europe; for if it were cut off the margin of the map, or if another were made like it (which is the better plan), the student could then use it in the manner proposed in our last lesson; the other is a scale of British miles of considerably larger extent than the one on the map itself; now by cutting this off the margin, or, rather, by making a scale like it, the student can measure on the map the distance between any two places, after he has laid them down on it, according to their latitudes and longitudes as given in the preceding lists. This is done by placing 0 on the scale on the one place and bringing the edge of the scale to the other place; the number marked or indicated at the point of the scale which stands close to that place will show the number of British miles between the two places. The same may be done with the scale of latitudes; for by reckoning 35° on that scale placed at the one place as 0°, the number of degrees marked or indicated on the edge at the other place, diminished by 35°, will be the number of degrees between the two places, which may be reduced to British miles as directed in our last lesson.

Note.—In using the table of the parts of a degree corresponding to any given number of minutes, if a number of minutes be given which is not in the table, an approximation to accuracy sufficiently near for common purposes may be had by taking the number of minutes in the table which is nearest to the given number as the real number in question, and proceeding as there directed. If greater accuracy be required, a degree must be graduated into minutes, and the exact number of minutes taken from this scale.

LESSONS IN ARITHMETIC.—No. XXIV.

VULGAR FRACTIONS.

The following answers to the Exercises in our last Lessons were sent to us by W. E. Williams, Merthyr Tydvil, and others:—

EXERCISES TO PROB. VII.

Answers: (1.) $\frac{11}{60}$; (2.) $\frac{1}{351}$; (3.) $\frac{11}{60}$; (4.) $2\frac{31}{88}$; (5.) $598\frac{1}{3}$; (6.) $24\frac{13}{15}\frac{8}{12}\frac{11}{3}$.

EXERCISES TO PROB. VIII.

Answers: (1.) $\frac{5}{288}$; (2.) $\frac{385}{2187}$; (3.) $\frac{5}{280}$; (4.) $\frac{272}{2058}$; (5.) $\frac{1}{8}$ (6.) $\frac{7}{40}$.

MULTIPLICATION OF FRACTIONS.

RULE 2.—When the multiplier is a whole number, and the multiplicand a fraction, or *vice versa*. Multiply the numerator of the fraction by the whole number, and under the product place the denominator, the result is the answer. This rule is explained in Art. 11, p. 134, vol. ii, and by applying the general principle that the product is the same when the multiplier becomes the multiplicand, and the multiplicand the multiplier. Otherwise, by making the whole number a fraction, by Prob. IV., Rule 1 becomes applicable to this case also.

EXAMPLE 1.—Multiply $\frac{7}{8}$ by 12.

Here, $7 \times 12 = 84$; and $\frac{84}{8} = 10\frac{1}{2}$; answer.
Otherwise, $\frac{7}{8} \times \frac{12}{1} = \frac{84}{8} = 10\frac{1}{2}$; as before.

EXAMPLE 2.—Multiply 156 by $\frac{3}{4}$.

Here, $156 \times 3 = 468$; and $\frac{468}{8} = 58\frac{1}{2}$, answer.
Otherwise, $\frac{156}{1} \times \frac{3}{4} = \frac{468}{8} = 58\frac{1}{2}$, as before.

EXERCISES.

Find the products indicated by the following expressions.—(1.) $79 \times \frac{3}{4}$; (2.) $86 \times \frac{3}{10}$; (3.) $1428 \times \frac{7}{15}$; (4.) $\frac{7}{16} \times 112$; (5.) $\frac{1}{11} \times 476$; (6.) $\frac{25}{17} \times 2$.

RULE 3.—When the multiplicand is a mixed number, and the multiplier a whole number, or *vice versa*. Multiply the whole number in the given mixed number by the given whole number, by the rules of simple multiplication, vol. i.; then, multiply the fraction in the given mixed number by the same given whole number, according to the preceding rule; then add the two products together, and the result will be the answer required. The reason of this rule is evident, from the principle that the product of any two factors is equal to the sum of the products of the separate parts of the one factor multiplied by the other factor.

EXAMPLES.

Multiply $40\frac{7}{10}$ by 12; and 18 by $56\frac{3}{4}$.

First, $40 \times 12 = 480$; and $\frac{7}{10} \times 12 = \frac{84}{10} = 8\frac{4}{5}$;
Whence, $480 + 8\frac{4}{5} = 488\frac{4}{5}$; first answer.

Second, $18 \times 56 = 1008$; and $18 \times \frac{3}{4} = \frac{54}{4} = 13\frac{1}{2}$;
Whence, $1008 + 13\frac{1}{2} = 1021\frac{1}{2}$; second answer.

Otherwise: reduce the given factors to improper fractions by Prob. IV., and apply Rule 1., the products thus obtained will be the same as before. Thus, in the preceding examples, we have

First, $40\frac{7}{10} = \frac{407}{10}$; and $12 = \frac{12}{1}$;
Whence, $\frac{407}{10} \times \frac{12}{1} = \frac{4884}{10} = 488\frac{4}{5}$, first answer.

Second, $18 = \frac{18}{1}$; and $56\frac{3}{4} = \frac{227}{4}$;
Whence, $\frac{18}{1} \times \frac{227}{4} = \frac{4086}{4} = 1021\frac{1}{2}$, second answer.

RULE 4.—When the multiplicand and multiplier are both mixed numbers, multiply the whole numbers of the given mixed numbers together, by the rules of simple multiplication, vol. i.; then, multiply each given fraction by the whole number attached to the other given fraction Rule 3; next multiply the two fractions of the given mixed numbers together by Rule 1; lastly, add these three products together, and the sum will be the product required. The reason of this rule is founded on the principle formerly explained, that the product of any two factors is equal to the sum of the products of all the parts of one of the factors, multiplied by all the parts of the other factor.

Otherwise: reduce the given mixed numbers to improper fractions by Prob. IV., and then apply Rule 1, as if they were proper fractions. The reason of this rule is plain from Rule 3, Prob. IV.; for, as the integers contained in the mixed numbers are added to the proper fractions which belong to them, the product will be the same as if the separate products of each were obtained, and then added together as above mentioned.

Note.—In all cases, the answer as usual, should be reduced to its lowest terms, or to a whole or mixed number, as may be required by the form in which it appears after the operation of the rule.

EXAMPLE 1.—Multiply $4\frac{3}{4}$ by $5\frac{1}{2}$.

Here, $4 \times 5 = 20$; $4 \times \frac{1}{2} = 2$; $5 \times \frac{3}{4} = \frac{15}{4} = 3\frac{3}{4}$, and $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$; whence $20 + 2 + 3\frac{3}{4} + \frac{3}{8} = 26\frac{1}{8}$, answer.
Otherwise, $4\frac{3}{4} = \frac{19}{4}$; and $5\frac{1}{2} = \frac{11}{2}$;
Whence, $\frac{19}{4} \times \frac{11}{2} = \frac{209}{8} = 26\frac{1}{8}$, answer, as before.

EXAMPLE 2.—Multiply $1680\frac{3}{7}$ by $200\frac{5}{8}$.

Here, $1680 \times 200 = 336000$; $1680 \times \frac{5}{8} = \frac{8400}{8} = 1050$; $200 \times \frac{3}{7} = \frac{600}{7} = 85\frac{5}{7}$; and $\frac{3}{7} \times \frac{5}{8} = \frac{15}{56}$;
Whence, $336000 + 1050 + 85\frac{5}{7} + \frac{15}{56} = 337135\frac{55}{56}$, answer.
Otherwise. $1680\frac{3}{7} = \frac{11763}{7}$; and $200\frac{5}{8} = \frac{1605}{8}$;
Whence, $\frac{11763}{7} \times \frac{1605}{8} = \frac{18870615}{56} = 337135\frac{55}{56}$, answer, as before.

Note.—When a series of three or more fractions or fractional quantities are to be multiplied together, the preceding rules must be applied to any two of them; then, to their product and a third one; next to their product and a fourth one; and so on till the product of the whole of them be found. This process may be abridged, or rather avoided, by reducing all the given quantities to the fractional form, arranging them in a line for multiplication, and taking advantage of the method of cancelling factors, see p. 238, vol. ii.

EXERCISES.

Find the products indicated in the following expressions:
(1.) $4\frac{1}{2} \times 4\frac{1}{3}$; (2.) $7\frac{2}{3} \times 8\frac{3}{5}$; (3.) $49\frac{7}{10} \times 68\frac{5}{11}$;
(4.) $225\frac{5}{16} \times 32\frac{7}{12}$; (5.) $1000\frac{1}{8} \times 111\frac{2}{15}$;
(6.) $47685\frac{1}{4} \times 376\frac{3}{8}$.

PROBLEM IX.

To divide one fractional quantity by another.

RULE 1.—When the divisor and dividend are both proper fractions, invert the divisor and multiply the dividend by this inverted fraction; the product will be the quotient.

The reason of this rule may be explained as follows: take for example two proper fractions $\frac{3}{4}$ and $\frac{5}{7}$, and let it be required to find the quotient of $\frac{3}{4}$ by $\frac{5}{7}$. You will remember that the fraction $\frac{5}{7}$ may be considered as $\frac{1}{7}$ of 5 (No. 7, p. 133, vol. ii.); and that to divide the fraction $\frac{3}{4}$ by 5, we must multiply the denominator (see Art. 11, Principle 3, p. 134); the quotient is therefore $\frac{3}{20}$; but we wish to have the quotient of $\frac{3}{4}$ by $\frac{1}{7}$ part of 5 only; we must therefore multiply the quotient of this fraction by 5, by the number 7, because its quotient by $\frac{1}{7}$ part of 5 will be seven times greater than its quotient by 5; for in proportion as we diminish the divisor we increase the quotient; performing this process, then, the quotient becomes $\frac{21}{20}$, which is the true answer to the question. The general process then is simply this; in order to divide one fraction by another, you first divide the multiplicand by the numerator of the divisor, and then multiply the quotient by its denominator (see Art. 12, Principle 3, p. 134); but this process is equivalent to the words expressed in the rule, for $\frac{3}{4} \times \frac{7}{5} = \frac{21}{20}$; whence $\frac{21}{20} = 1\frac{1}{20}$ is the quotient of $\frac{3}{4}$ divided by $\frac{5}{7}$.

Another view of the reason of this rule is sometimes given in the following manner: taking the two given fractions above, viz., $\frac{3}{4}$ and $\frac{5}{7}$, reduce them to a common denominator by Prob. II., and they become $\frac{21}{28}$ and $\frac{20}{28}$; now, these two fractions being brought to parts of the same value, viz., *twenty eighths*, we have only to divide the number of parts in the dividend $\frac{21}{28}$, by the number of parts in the divisor $\frac{20}{28}$, that is, to divide 21 by 20,

in order to get the true quotient; for it is no longer the *parts* that we are concerned with, but their *number*; and we wish to know *how many times the one number* is contained in the *other number*. We therefore divide 21 by 20, thus $\frac{21}{20} = 1\frac{1}{20}$, and we have the true quotient as before.

EXAMPLE 1.—Divide $\frac{3}{8}$ by $\frac{5}{9}$.

Here, $\frac{3}{8} \times \frac{9}{5} = \frac{27}{40}$, the answer required.

EXAMPLE 2.—Divide $\frac{3}{7}$ by $\frac{2}{63}$.

Here, $\frac{3}{7} \times \frac{63}{2} = \frac{189}{14} = 21$, the answer.

The answer here is a whole number, and considerably larger than either the dividend or divisor, but this can occasion no surprise, for 21 is only the *number of times* that one fraction contains a much smaller fraction.

EXERCISES.

Divide the following fractions by each other, according to the indicated expressions:—

(1.) $\frac{3}{4} \div \frac{7}{8}$; (2.) $\frac{11}{12} \div \frac{15}{16}$; (3.) $\frac{47}{12} \div \frac{23}{94}$;
(4.) $\frac{23}{25} \div \frac{17}{50}$; (5.) $\frac{237}{465} \div \frac{5}{10}$; (6.) $\frac{1}{2} \div \frac{1}{800}$.

For the encouragement of our fractional students we insert the following problem sent to us by Autodidactos, a *self-taught* student; and it will be an answer at the same time to some other correspondents as J. P. (Norfolk), &c.

PROBLEM.

There is an island 146 *miles in circumference, and three footmen all start together to travel the same way about it. A goes* 5 *miles a day, B goes* 8, *and C* 10 *miles. Required the time in which they will all come together again by the best and simplest method?*

SOLUTION.

RULE.—The least common multiple of the times in which each makes one revolution, gives the time in which they will all come together again:—

	miles		day		miles		days
As	5	:	1	: :	146	:	$\frac{146}{5}$
As	8	:	1	: :	146	:	$\frac{146}{8}$
As	10	:	1	: :	146	:	$\frac{146}{10}$

The times in which A, B, and C, will each make one revolution.

Reducing these fractions to a common denominator, we have $\frac{11680}{400}$, $\frac{7300}{400}$ and $\frac{5840}{400}$. Then finding the least common multiple of all the numerators, we get the following, thus:—

1460	11680,	7300,	5840,
4	8,	5,	4,
	2,	5,	1,

Wherefore, $1460 \times 4 \times 2 \times 5 = 58400$, the least common multiple. Consequently $\frac{58400}{400} = 146$ days, the time required.

LESSONS IN MECHANICS.—No. VII.

HOW TO JUDGE OF A BUILDING.

To judge of a building, Sir H. Wotton lays down the following rules:—That before passing any judgment, a person be informed of its age, since if apparent decays be found to exceed the proportion of time, it may be concluded, without further investigation, either that the situation is defective, or the materials and workmanship too slight. If it be found to bear its years well, let him revert from the ornaments which at first strike the eye to the more essential parts of the building, till he be able to form a conclusion that the work is commodious, firm, and handsome.

Vasari proposes another method, namely, by passing a running examination over the whole edifice, compared to the structure of a well-made man—as, whether the walls stand upright upon a clean footing and foundation; whether the building be of a beautiful stature; whether for the breadth it appears well furnished; whether the principal entrance be in the middle line of the front or face, like our mouths; the windows, as our eyes, set in equal number and distance at both sides; the offices, like the veins, usefully distributed, &c.

Vitruvius gives a third method of judging, summing up the whole art under these six heads: Ordination, or settling the model or scale of the work; Disposition, the front expressive of the general design thereof; Eurythmy, the agreeable harmony between the length, breadth, and height of the several rooms, &c.; Symmetry, or the agreement between the parts and the whole; Decor, the due relation between the building and the inhabitant, whence Palladio concludes the principal entrance ought never to be limited by any rule, but by the dignity and generosity of the master; and lastly, Distribution, the useful casting of the several rooms for office, entertainment, or pleasure.

An old English writer gives a few aphorisms in building, which are well worthy of attention. "1. Let not the common rooms be several, nor the several rooms common; that is, the common rooms not to be private or retired, as the hall, passages, &c., which are to be open, and the chambers to be retired. 2. A house had better be too little for a day than too big for a year. Houses, therefore, should be proportioned to ordinary, not to extraordinary occasions. 3. Country houses should be substantives, able to stand of themselves: not like city buildings, supported and sheltered on each side by their neighbours. 4. Let not the front look asquint on a stranger, but accost him right at his entrance. 5. Let the offices keep their due distance from the mansion-house; those are too familiar which are of the same pile with it."

ORNAMENTATION.

Most buildings admit of ornament, but it should be always ornament of an appropriate character. Good taste is frequently offended by the introduction of accessories altogether out of place. It is in the correct adjustment of the decorative to the useful that the taste of the architect is exhibited. Few things are more objectionable than the display of that meretricious ornament which seeks to be thought what it is not—a dishonest attempt to cheat the observer with the belief that much labour and expense have been spent over what has really cost very little.

With regard to these modern imitations of reality, instead of what is real, even though inferior in quality, Ruskin has said some strong things, but not too strong. It is a vicious tendency, and cannot be too strongly condemned. He says:—

"We are none of us so good architects as to be able to work habitually beneath our strength: and yet there is not a building that I know of, lately raised, wherein it is not sufficiently evident that neither architect nor builder has done his best. It is the especial characteristic of modern work. All old work nearly has been hard work. It may be the hard work of children, of barbarians, of rustics; but it is always their utmost. Ours has as constantly the look of money's worth, of a stopping short wherever and whenever we can, of a lazy compliance with low conditions; never of a fair putting forth of our strength. Let us have done with this kind of work at once: cast off every temptation to it: do not let us degrade ourselves voluntarily, and then mutter and mourn over our shortcomings; let us confess our poverty or our parsimony, but not belie our human intellect. It is not even a question of how *much* we are to do, but of how it is to be done; it is not a question of doing more, but of doing better. Do not let us boss our roofs with wretched, half-worked, blunt-edged rosettes; do not let us flank our gates with rigid imitations of mediæval statuary. Such things are mere insults to common sense, and only unfit us for feeling the nobility of their prototypes. We have so much, suppose, to be spent in decoration; let us go to the Flaxman of his time, whoever he may be, and bid him carve for us a single statue, frieze, or capital, or as many as we can afford, compelling upon him the one condition, that they shall be the best he can do; place them where they will be of most value, and be content. Our other capitals may be mere blocks, and our other niches empty. No matter; better our work unfinished than all bad. It may be that we do not desire ornament of so high an order: choose, then, a less developed style, as also, if you will, rougher material; the law which we are enforcing requires only that what we pretend to do and to give shall both be the best of their kind; choose, therefore, the Norman hatchet work, instead of the Flaxman frieze and statue, but let it be the best hatchet work; and if you cannot afford marble, use Caen stone, but from the best bed; and if not stone, brick, but the best brick; preferring always what is good of a lower order of work or material, to what is bad of a higher; for this is not only the way to improve every kind of work, and to put every kind of material to better use; but it is more honest and unpretending, and is in harmony with other just, upright, and manly principles."

OPERATIVES EMPLOYED.

Those who are employed in building are as follows:—Digger or excavator, bricklayer, mason, slater, sawyer, carpenter, joiner, plasterer, modeller, carver and gilder, plumber, smith, glazier, painter and decorator. All these various trades come within the immediate range of the building business.

EXCAVATOR.

The work of the excavator is perfomed with a pickaxe and a spade. With the pickaxe, the stiff, hard soil is broken down, and cast out with the spade. When the soil is alluvial, it may be easily shovelled out without the use of a pickaxe. A good digger will throw out ten cubic yards of soil in a day's work; but when the soil is stiff clay or firm gravel, not more than six. When rock occurs in the foundation, the assistance of a quarryman is required to cut through or blast it. The digger should produce a perfect level in every direction, not with loose matter, but on the solid bed.

BRICKLAYERS.

Bricks are more durable than wood, less combustible, and consequently less liable to be burnt; they are also cheaper than stone. Bricks form an important item in building materials. The length of a brick is twice its breadth, which allows of their being so laid as to guard against parting in pieces. A wall of bricks may be formed of any required thickness. Bricks are united together by mortar (a mixture with water of lime and sand*), which sets quickly, hardens with age, and resists the action of rain and time. The strength and stability of the wall depends on its perpendicularity, as well as on its thickness; there is great importance in building a wall true. The usual mode of proceeding is to strike a line from end to end of the course on which the bricks are to be laid, the surface of the under course is spread for a short distance with mortar, and the bricks intended to form the outer surface of the wall are first laid in an exact line with the cord, the plumb being frequently used to ascertain if they are perpendicular. "The plumb is a piece of board with a notch at the centre of the top, and a hole, also in the centre, near the bottom; a piece of cord is passed through the notch, with a leaden ball attached, which swings in the hole, as the plumb is placed at the side of the wall. The ball of lead just falls in the hole, if the wall is upright, and in this way a wall may be built to any height exactly perpendicular." The *arris*—that is, the corner of the brick-work where windows or other apertures occur—has to be made upright both at the front and at the side.

Bricks should not only be *laid*, they should be rubbed down so as to press the mortar into the interstices; this is accomplished most readily if the brick be made wet. To carry up the bricks wet, would increase the labour of the hodman; for the bricklayer to wet every brick, would interfere with the progress of his work; but a boy might be employed to dip or thoroughly damp every brick before handing it to the workman, and it should be that workman's business to see that the brick is so laid as to insure the adhesiveness of the mortar. Sometimes too much mortar is used; and then, under the changes of temperature, it expands, contracts, and splits the brick. Hence the necessity so frequently recurring of re-pointing a wall.

The great art in bricklaying is to have every course perfectly horizontal, both longitudinally and transversely, and perfectly plumb. The term *bond* in bricklaying is employed to describe that arrangement which makes the bricks of every course cover the joints of those in the course below it; this arrangement more effectually adds to the stability of the structure than any other, as it distributes more equally the pressure, and renders every part more dependent on the rest than would otherwise be the case. Now, as many failures occur in consequence of a neglect of the principles of bond, it is highly necessary to direct the attention of practical operatives especially to this point. Whatever arrangement be adopted with regard to headers and stretchers, attention to bond is of the utmost importance. No brick should be cut if it can possibly be avoided.

All the walls of a building that are to sustain the same floor and the same roof should be carried on at the same time; under no circumstances should more be done in one part than can be reached from the same scaffold, until the walls are all brought up to the same height, and the corners and joins well looked after.

Every course of brick, when left, should be well flushed up with mortar, to prevent the intrusion of wet; brick-work should never be carried on in frosty weather, nor even when it is likely that frost will occur. Covering an unfinished wall with a layer of straw, when frost may probably supervene, is a useful precaution.

TILERS AND SLATERS.

Tiling is now but seldom used, the advantages of slate for roofing being generally recognised. Tiling consists of two sorts—plain tiling and pantiling. Plain tiles are simple parallelograms, about ten inches long by six wide; each tile has a hole pierced through it at one end to receive the wooden pin, by which it is hooked on to the lath. The tiles are laid in mortar on the laths, overlapping one another. Pantiles are larger than ordinary tiles, and of a twisted form; they are not laid side by side, but literally overlap. Pantiling is always improved by being pointed on the inside with hair and lime.

Slates are now much more commonly employed than tiles.

* Hair is frequently mixed with the mortar, to render it more cohesive and stronger.

ANSWERS TO CORRESPONDENTS.

IGNORAMUS: Thanks. Any letters forwarded to us will receive attention.—NAPOLEON: Instructions for playing the game to which you refer were given in "Cassell's Illustrated Family Paper."

AN INQUIRER: Lessons on Drawing will be included in the re-issue of the POPULAR EDUCATOR. The subject is one of very considerable importance, and will receive our best attention. We cannot assist you with a recipe for cleaning a "soiled drawing," without we know what description of drawing it is. Is it pencil, chalk, or water colour?—R. C.: You must work out the rules which are given; send in your exercise.

METELLUS.—Metellus is the name of several illustrious Romans: chief among them is Cæcilius, who rendered himself illustrious by his successes against Jugurtha, the Numidian king. He took, in this expedition, the famous Marius as his lieutenant; but, subsequently, had cause to repent of his confidence. Marius raised himself to power by defaming the character of his benefactor; and Metellus was recalled to Rome and accused of extortion and incompetency. Although he was honourably acquitted on both charges, Marius was appointed his successor, and finished the Numidian War.

CROMMAGLEN: You are probably right in your conjecture. Our "History of Ireland" is published (three volumes in one) at 2s. 3d.—A LOVER OF TRUTH: The Greek word *baptizo* is held to be significant of sprinkling or pouring; it is certain that it also means to immerse. The interpretation of this word has given rise to much polemical discussion, into which it is not necessary for us to enter here.—J. A. R.: Athletic exercise will come in due course.—SAMUEL L. S.: English, Latin, Euclid.—ALICE R.: Persevere in your Latin.—ANXIOUS will be gratified with our Shorthand: handwriting good.—W. S.: Your suggestion shall have our best attention.—C. H.: Study the English Lessons so as to thoroughly understand them. It is not necessary either to write them out or commit them to memory, if you know exactly what they are about.

L. M.—Etymology is not only a "very curious and interesting," but a really valuable branch of knowledge. Take the etymology of the word "etymology;" what does it mean? It is derived from two Greek words, and signifies the true account of a word. Etymology may be considered either in a philosophic or historic sense. Historic etymology gives us the true account of words, so far as to trace them in their root forms in the languages from which we have received them. Thus the word "sense" comes to us from the French *sens*, and the Latin *sentio*, the primary meaning of the word being to feel, or to apprehend by feeling. Philosophic etymology begins where historic etymology ends: it gives us the true account of words so far as to trace them to their origin in nature, and explain it. Thus, "candour" is derived from the Latin *candeo*, to glow with a clear light, as a red-hot substance. As such a light enables us to see, as it were, into the heated substance, so openness of character, which candour represents, gives us an insight into the heart.

LITERARY NOTICE.

CASSELL'S PRONOUNCING GERMAN READER. Consisting of Extracts in Prose and Verse, with appropriate Vocabularies. 12mo, paper covers, 1s.; cloth, 1s. 6d.

In learning a modern language, the object is not simply, as in the case of one no longer spoken, to be able to read and write, but also to speak it. For this purpose, it is obviously necessary to acquire a knowlege of the pronunciation, as well as the meaning of words. It is hoped that the lessons—selected from the best German authors—contained in this volume will be found more adapted for such a purpose than any mere collection of rules, however carefully drawn up, and however clearly expressed. Besides answering the purpose of teaching German pronunciation, this little work is calculated to be very useful as a German Reader. The pronouncing lessons themselves are good exercises in translation, and these are followed by a number of other easy and interesting extracts from German authors, particularly adapted for the use of beginners, and suited for students of every age. By the aid of this work, and of "Cassell's German Pronouncing Dictionary," any one of ordinary ability may soon be able to converse in the language with accuracy. The moderate price at which these lessons are published is an additional recommendation on which it is needless to enlarge.

London: CASSELL, PETTER, & GALPIN, La Belle Sauvage Yard, E.C.

LESSONS IN GEOGRAPHY.—No. XXII.

MAP OF ASIA.

(*Continued from p.* 386, vol. II.)

Fig. 1.—The Caucasian Race.

The rivers of Asia exceed in magnitude and extent any of the rivers of Europe, and are themselves only surpassed by those of America. These large rivers have their source in the mountains which border the immense plateaus already described, and they flow through the plains northward, eastward, and southward, into the surrounding oceans. In the Altaian range of mountains rise the large rivers, Obi, Yenisei, and Lena, which, after traversing the plains of Siberia for the respective lengths of about 2,500, 2,900, and 2,400 miles, fall into the Arctic Ocean. The Obi is said to drain a surface of a million and a quarter of square miles. In the mountains of China, and the Chinese empire, rise the Amour, or Sagalien, which, after a course of about 2,000 miles, falls into the sea of Ochotsk; the Hoang-ho, or Yellow river, which after a course of about 2,500 miles, falls into the Yellow Sea; the Yang-tze-Kiang, or Kian-ku, which after a course of about 3,000 miles, falls into the same sea; and the Choo-Kiang, or river of Canton, which after a course of about 1,000 miles, falls into the Chinese Sea. In the eastern peninsula run the rivers called the Sankoi, the Maykaung, the Meinam, the Saluen, and the Irrawady; these fall respectively into the Gulf of Tonquin, the Chinese Sea, the Gulf of Siam, and (the two latter) the Gulf of Martaban. Hindostan proper is bounded on the north-east by the Ganges, which rises in the southern slope of the Himalayan range of mountains, and after a course of about 1,600 miles, falls into the Bay of Bengal; this river is navigable to about half its distance from its mouth, that is, up to the point where it receives the waters of the Jumna. At Calcutta, where it falls into the sea, it forms a vast delta, called the Sunderbunds, and the navigable branch for large vessels is here called the Hoogly. Near the mouth, this river receives the waters of the Brahmapoutra, which rises in an opposite direction. Hindostan, again, is bounded on the north-west by the Indus, a river which gives its name to all India, and which, rising also in the Himalayan range of mountains, but on the northern side, at an elevation of about 15,000 feet, passes round its western extremity, and then runs a south-westerly course of about 1,200 miles, falling into the Arabian Sea by a delta near Tattah. About 500 miles from its mouth, this river receives the waters of *five rivers*, the Jeloum, the Chenaub, the Ravee, the Beyas, and the Sutlej; hence the name of the country is the Punjaub (that is, the *five rivers*). This river is navigable for large steamers at the distance just mentioned, and for smaller vessels 500 miles higher. The Tigris and Euphrates, which rise in Armenia, and flow through the plains of Mesopotamia (the one after a course of nearly 1,000 miles, and the other after a course of about 1,600 miles), unite in the river called Shat-el-Arab, and fall into the Persian Gulf at Basra or Balsora. In Asia Minor flows the Kisil-

Fig. 2.—The Egyptian Race.

Fig. 3.—The Mongolian Race.

Irmak (the ancient *Halys*), through a course of about 500 miles, and falls into the Black Sea. The Caspian Sea receives the waters of the River Kour, after a course of about 500 miles. The Sea of Aral receives the waters of the Amoo or Jihon (the ancient *Oxus*), after a course of about 1,300 miles; and of the Sirr (the ancient *Jaxartes*), after a course of more than 1,000 miles. Such are the most striking physical peculiarities of the great continent of Asia.

In discussing the geography of the different continents, we ought to treat of the botany, the natural history, the mineralogy, and the geology of each; but it is manifest that this would lead us away from the subject of geography, strictly so called; we must, therefore, limit our present discussions as much as possible, leaving these subjects to be treated properly under their respective heads. As ethnography (*the description of nations*) has not yet, however, reached the rank of a popular science, we shall give its principal heads under the following observations on the different races of men:—A rigorous classification of the different groups of the human family, according to the character of each race, is in the present day impossible. The increasing tendency which mankind have to contract marriages with those of different nations, and even in the same nation with those of different races or families, renders the question every day more obscure, by obliterating the original characters of each. Nevertheless, by taking into consideration the differences of organisation, languages, and habitudes, drawn from historical and religious traditions, science has made out with tolerable accuracy the existence of five great races, which constitute, perhaps not with very determinate and rigorous distinctions, a classification both convenient and useful. To each of these great divisions, all the subdivisions which the progress of science has realised in the history of nations, may be easily referred. The names of the five different races of men are the following:—The Caucasian, the Mongolian, the Ethiopian, the Malayan, and the American.

1. *The Caucasian race*: The common characteristics assigned to this race are as follows:—A white skin, with a tone or blush of the colour of flesh; the tincture of the skin becoming more or less brown under the influence of heat and light; long waving hair, of a light or deep colour; an ample beard; a large skull compared with the size of the face; a facial angle from 80° to 85°; the form of the cranium spheroidal, and of the face oval; a narrow nose, more or less aquiline and prominent; vertical teeth; lips slightly projecting; chin prominent, narrow, and rounded. The beau ideal of this race is seen in the head of the Apollo Belvedere, fig. 1. The nations which are referred to this race occupy the whole of Europe (except Lapland, Finland, and a part of Russia), western Asia, Turkey, Arabia, Persia, Tartary, Afghanistan, and Hindostan, northern and eastern Africa, Barbary, Egypt, Nubia, and Abyssinia.

It is supposed that all these nations had for a common stock a tribe, or a number of tribes, which originally inhabited the Caucasian chain of mountains which form part of the boundary between Europe and Asia, and that from this region they spread themselves by successive migrations into Europe, Asia, and part of Africa. It is admitted, also, that the various influences of light, heat, diet, customs, and especially of climate, are sufficient to account for the differences which exist among these nations, and which have not entirely effaced the primitive type of the race. The consideration of these differences, especially of those which arise from languages, has led to the subdivision of this great family of nations into secondary groups, which are independent of their actual location (situation with regard to place).

In the parent languages or mother-tongues of Europe and western Asia, the Sanscrit, the Zend, the Greek, the Slavonic, and the German, the analogies of grammatical construction, and the similarity of words, have induced the belief that they were all derived from one primitive language; and thus have been combined into the same group, under the name of the Indo-European family, the peoples which, speaking these languages original or derived, appear to be connected by an additional relationship, viz., that of language. This great family has been subdivided into several branches. In Asia, we find the Persian branch, of which the languages traced to the Zend, are those which included, in former times, the Persians, the Medes, and the Bactrians; and in later days, the Persians, the Afghans, the Koords, and the Armenians; next, the Hindoo branch, of which the languages traced to the Sanscrit are those which include the peoples who speak the following dialects: Cashmerian, the Marashda, the Telinga, the Tamul, the Malabarian, and the Hindoostani; and likewise the inhabitants of Sinde, and of the countries bordering the Ganges, which may be denominated the Ganghistan, of the Deccan, and of the island of Ceylon. A third branch is formed of the European nations whose languages approach the Zend and the Sanscrit by affinities more or less distinct, and which include the Greek, the Latin, the Slavonic, the German, and the Scandinavian tongues. These nations form the principal part of the population of Europe, and inhabit Greece, Spain, France, Russia, Poland, Germany, the British Empire, the Netherlands, Sweden, Norway, and Denmark. Some ancient nations, whose languages differed from the Indo-European type, although they belonged to the Caucasian race, have contributed to the origin of the modern peoples, and to the formation of the living tongues of Europe. Thus we find that the Basque tribes at the foot of the Pyrenees have preserved a dialect of the ancient Iberian language; and the inhabitants of Ireland, Scotland, Wales, and Britany have preserved some dialects of the ancient Celtic languages. Among the nations which at the present day inhabit the Caucasus Mountains, and which exhibit in their organisation the general characters assigned to the Caucasian race, there is only one, that of the Ossetes, which is connected by language with the Indo-European family. The rest speak some languages which have not hitherto been classified by any analogies; such as the Circassians, the Lesghi, the Georgians, and the Mingrelians.

The Aramean languages, which have for their common character an abundance of guttural sounds, a rich vocabulary, a multiplicity of inflections in the verb, and a simplicity in other grammatical relations, comprehend the Syriac or Aramean, the Chaldean, the Phenician, the Hebrew, the Arabic, the Gheez, and the Amharic. To those nations of which the affinity of their tongues lead to their being combined in the same group, under the name of the Aramean or Shemitic family, belong those in ancient times known by the name of Assyrians, Chaldeans, Phenicians, Hebrews, Arabians, Lybians, Numidians, Getulians, and Ethiopians; and, in modern times, the tribes of Libanus which speak Syriac, the Arabs found in the west of Asia and the north of Africa, the Jews found in every region of the globe, and the Abyssinians who speak the Gheez and the Amharic.

The ancient Egyptians, separated from all others by their language and their institutions, and whose physical type is preserved in their monuments and in their mummies, appear to be connected with the Caucasian race in the form of the cranium and the lineaments of the visage. Skin of a dark colour, a large forehead, a round chin, a straight nose, large eyes, thick lips, high and projecting ears, and scarcity of beard, were the general characteristics of the ancient Egyptians, and they are still found among the Copts who speak the same language, and who are connected with several of the Nubian and Abyssinian tribes. The type of the ancient Egyptian race is seen in the head of Rhamses, fig. 2.

2. *Mongolian race.*—The common characteristics of this race are the following: a yellow skin; the hair straight, black and thin; a flat face, and high cheek bone; the nose short, broad and flat; the eyelids oblique, and a large space between the eyes; a low forehead, and a spherical or pyramidal cranium. The nations included under this race inhabit northern and eastern Asia, the north of Europe, and the north of America. These nations are supposed to have sprung from the nomade (wandering) tribes, which, from the great plateau of central Asia, spread themselves to the north, the west, and the east at different periods, of which some historical accounts are still preserved. The considerations relating to language leads to the subdivision of these nations into three branches, which are also distinguished by some organic characteristics. The Scythico-Samatian tongues, the Finnish, the Lapponian, the Esthonian, the Livonian, the Permian, and the Magyar, seem to connect into a distinct family, by the relationship of language, the peoples of the north of Europe which inhabit Finland, Lapland, Esthonia, Livonia, the Russian provinces in the neighbourhood of the Ural Mountains, and the River Wolga, Transylvania and

Hungary, and others connected by their physical characteristics, as the Woguls, the Ostiaks, the Samoeids, and Kamschatdales of the north of Asia, and the Esquimaux and Greenlanders of North America. The Turkish, Tartarian, Mongolian, and Mandchurian languages, connected in some respects with those of the Caucasian race by their grammatical structure, and especially by the existence of conjugations and declensions, separate the peoples of central Asia from the group of those nations noted for monosyllabic languages, among which the Mongols and the Kalmucks exhibit the organic type of the race; whilst the Turks, the Buckkarians, and the Tartars of Siberia, are perhaps more connected with the Caucasian race in physical characteristics. Indeed, we find in a very marked degree all the traces of the Mongolian race in the group of nations forming the same family, which employ the languages called monosyllabic (that is, who employ words chiefly of one syllable). These languages, which want generally the means of directly marking the cases and the genders of nouns, and the moods and tenses of verbs, include the Thibetian, the Chinese, the Birman, the Siamese, and the Annamic, are spoken by the inhabitants of eastern Asia, Thibet, China, the Birman empire, Siam, Cambodia, Tonquin, Cochinchina, and Corea. The Japanese, by their language, which is of a more improved character seem to be separated from this group, with which, however, they are connected in their physical organisation. The best type of the Mongolian race is seen in the Chinese head, fig. 3.

(To be continued in the Explanation of Maps.)

LESSONS IN ENGLISH.—No. XLIII.

By JOHN R. BEARD, D.D.

NAMES OF PERSONS.

NAMES of persons were originally descriptive; they had each a meaning, and that meaning set forth some individual peculiarity; something in the make, the form, the character, the history of the person to whom the name was given. Thus the first man was called *Adam* (in Hebrew, *red earth*) because he was formed out of the earth. And Adam called his wife *woman*, because she was the counterpart of man. In the Hebrew original the correspondence is well marked; woman is there called *isha* because she was taken out of *ish*, the former being the feminine form of the masculine noun ish, *man*. The derivation of woman has been disputed. Woman seems to be *womb* man; womb, denoting the feminine gender. Womb has been compared with the German weib, which is found in our *wife*. It is not unlikely that all these forms, namely wife, weib, womb, wo (man) are tracible to the phuo, fu of the Greeks, which is found in the fui (*I was*) of the Latins, and in their *femina*, a *female*. This view makes *woman* equivalent to *wife-man*, and so brings the English into a near resemblance to the Hebrew. The *o* in woman is no obstacle. In the plural the *o* becomes *e* or *i* in pronounciation. So was it written of old, e.g.,

"And the noumbre of men that eaten was fyve thousynd of men, out taken wymmen and litel children."—*Wiclif*, Matthew xiv.

"And they that ate were in nombre aboute v. m. (five thousand) men, besyde wemen and children."—*Bible*, 1551, ib.

Richardson, however, in his "New English Dictionary," gives another view, which, though not approving it, I subjoin. "*Woman a. s.* (Anglo-Saxon) *wife-man*; man is a general term to include each sex (this is right), and the specific name *wife-man* is given to the female from her employment at the *woof*; and waepman to the male from his occupation in *weapons* of war."

It is completely in unison with primaeval custom, that Adam is represented as changing his wife's name from women to Eve (life) when she became a mother (Gen. iii. 20.)

In Anglo-Saxon, also, names of person had in each case a suitable signification. Thus our word Alfred means *all-peace*. I add other Anglo-Saxon names together with their meanings;—Alwin, *victorious*; Aldred, *reverend*; Bede, *he that prayeth*; Botolph; *help-ship*; sailors were called *botes carles*, that is, boat-servants; Cuthbert, *bright in knowledge*; Edmund, *truth-mouth*, *truth-speaker*; Edward, *truth-keeper*, *faithful*; Frederic, *rich-in-peace*; Goddard, *pious*; Godwin, *beloved of God*; Hengest, *horse-man*; Leofwin, *win-love*, *amiable*; Osborn, *house-bairn*, *house-child*; Ranulph (now Randall), *fair-help*; Richard, *rich in heart*, *benevolent*; Raymond, *quiet*, *peace*; Thurston, *most trusty*.

With a little care you may see from these instances how closely the Anglo-Saxon resembles the English. Thus Alwin is simply our all-win; so Aldred is all-dread; and Godwin, is God-win; and Leofwin, is love-win. Bede * too is found in beadroll, that is a rosary or string of prayers.

Originally persons had but one name each. This practice was very far removed from the modern absurdity presented in royal and noble families, in which single individuals have some four, some six, some eight or more names. Thus, besides what may be termed his orders and titles, the husband of Queen Victoria has at least five names, that is Francis Albert Augustus Charles Emmanuel. The Princess Royal also is called Victoria Adelaide Mary Louisa. In the Bible, which is the oldest book in the world, and presents the best picture of primaeval life, you find only one name given originally to each individual. I subjoin with their meanings a list of Biblical names in use among ourselves.

BIBLICAL NAMES.—HEBREW.

Masculine.		*Feminine.*	
Abraham,	*the father of a multitude.*	Adah,	*an assembly.*
Barnabas,	*son of consolation.*	Elizabeth,	*God hath sworn.*
David,	*beloved.*	Hannah,	*gracious.*
Gabriel,	*God is my strength.*	Jemima,	*handsome as the day.*
Jacob,	*he that supplants.*	Kezia,	*an angel.*
James,	*another form of Jacob.*	Leah,	*weary.*
Jeremiah,	*grandeur of the Lord.*	Mary,	*lady of the sea.*
John,	*the mercy of the Lord.*	Rachel,	*a sheep.*
Jonas,	*a dove.*	Rebekah,	*fat.*
Joseph,	*increase.*	Ruth,	*satisfied.*
Isaac,	*laughter.*	Sarah,	*a princess.*
Matthew,	*gift of God.*	Tabitha,	*clear-sighted.*
Nathan,	*a giver.*	Tamar,	*a palm-tree.*
Reuben,	*vision of the son.*	Zebadiah,	*portion of the Lord.*

Names also of Greek orgin are found in our tongue. These have for the most part come to us through the medium of the Bible, at one time the only cyclopædia of the English people.

BIBLICAL NAMES.—GREEK.

Masculine.		*Feminine.*	
Alexander,	*a helper of men.*	Chloe,	*green herb.*
Alphæus,	*chief.*	Claudia,	*lame.*
Andrew,	*a strong man.*	Julia,	*down, soft as down.*
Dionysius,	*divinely touched.*	Myra,	*flowing.*
Herod,	*son of a hero.*	Phebe,	*shining.*

In Augustus, *sacred*, Clement, *merciful*, Priscilla, *ancient*, &c., we have in English names of Latin origin which have come to us through the same medium.

In primitive times, and while population was small, the son was distinguished from his father by a different name. Thus, in the book of Genesis we find Terah, Abraham, Isaac, Jacob, Joseph. The same name, however, might in different families be given to different persons. How could they be distinguished the one from the other? The name of the father was employed sometimes with, sometimes without, the proper name of the son, as in these lines (Numbers, xxiii, 18):—

Rise up, Balak, and hear,
Harken unto me, thou *son of Zipporeh*.

Thus David is called "the son of Jesse" (1 Sam. xxv. 10.) In genealogical tables the word *son* is omitted, its force being given by the genitive case, as in Luke iii. 24: "which was (the son) of Matthat, which was (the son) of Levi; which was (the son) of Melchi; which was (the son) of Janna; which was (the son) of Joseph." Sometimes the Hebrew for son coalesced with the name of the father, as *Ben*aiah, *Ben*jamin, *Ben*-Hadad; *Bar*-Jesus;

* Bede, and bead Anglo-Saxon for prayer, is found in the German beten, *to pray*, and in the German nouns betfahrt, *a journey for prayer*, that is pilgrimage; bethaus, *prayer-house*, &c. It is found too in the old signification of our verb bid (from bieten, beten) which meant *to ask*, *intreat*, *pray*. From bede or bead, *a prayer*, comes beadsman and beadle. Here is seen the error of Richardson, who makes the sense of bead as a prayer to arise thus, "because one (bead) was dropped down a string every time a prayer was said," whereas the little globe was called a bead or prayer, because it reminded the worshipper of a prayer to be said, and so became the memento or symbol of a prayer. The rosary or chaplet ("Virgin's Psalter") was "150 Ave Maries and 15 Paters tacked together with little buttons upon a string."

Bar-Jona; *Bar*tholomew; *Bar*timaeus. If honour was implied, contempt was also expressed in such forms; e. g. (Judg. ix. 28) "and Gaal, *the son of Ebed* said, who is Abimelech and who is Shechem, that we should serve him? Is not he *the son of Jerubbaal?*" Instead of the father the grandfather's name was employed for the sake of distinction; "and David said to Abiathar, the priest, Abimelech's *son* (grandson)" (1 Sam. xxx. 7). In this way a step was taken towards the formation of what are called patronymics or family names, that is, names which denote the progenitor as well as one or more of his descendants; as the Abrahamidae, the offspring of the patriarch Abraham.

For a model of patronymics (from the Greek pater, *father*, and onoma, *a name*) we must advert to the Greek langurge. There we find the patronymic Peleides. Peleides signifies the son of Peleus. By comparing these two names together you see that Peleides is from Peleus by a change of termination, eus is changed into eides. A change strictly similar for the same purpose is found only in the Anglo-Saxon, where the addition of ing to the father's name gives the import of a son, as Ida waes Eopping, that is, *Ida was the son of Eoppa*. If, however, we look at the meaning rather than the form, we may find patronymics in other tongues.

These patronymics may be called Sirnames; names, that is, of the sire or ancestor. In this sense the term sirname is correctly used by Hume in his "History of England." "The Normans introduced the use of sirnames which tend to preserve the knowledge of families and pedigrees." (ii App. 2.) In Scotland Mac produces a kind of patronymic, as Macdonald. The Irish employ O abbreviated for the same purpose, as O'Leary, O'Neale. The Normans used the Celtic term Fitz (Latin filius, *a son*) to denote this relationship, as Fitz-Symons. This Fitz in Russian is Witz; thus Peter Paulowitz, *Peter Paulson*. To the same effect the Welsh employ their Ap, as David ap Howell, that is, *David the son of Howell*. Ap Howell has been abridged into Powell, so Ap Rhys has given rise to Price. At no very remote period such combinations as the following were not uncommon in Wales, namely, Evan-ap-Griffith-ap-David-ap-Jenkin, and so on to the seventh or eight generation. As a burlesque on this genealogical simplicity, cheese has been described as

> Adam's own cousin-german by its birth,
> Ap-curds-ap-milk-ap-cow-ap-grass-ap-earth.

In English the term son is an adjunct prolific in sirnames. By its aid we have Williams*on*, Wilso*n*, Bills*on*, Richards*on*, Richso*n* and Dicks*on*, Johns*on* and Jacks*on*, Harris*on*, Davids*on*, Davis*on*, with many more.

With sirname writers often confound a word of very different import, namely, surname. Surname, from the French, properly signifies an additional name,—a name that is given to describe some quality or peculiarity of the individual. Such additional or descriptive names or epithets were common among the Romans, as, Scipio *Africanus*, *Scipio of Africa*, or *of African repute*. They are also found in our own history, as, William *the Conqueror*; William *Rufus*; Richard *Cœur de lion* (of the lion-heart); John, *Lack-land*; Edward *Long-shanks*. So the French had for kings Charles *the Bald*; Louis *the stutterer*; and Philip *the fair*.

After the same manner, we have now Mr. Beard, Mr. White, Mr. Brown, Mr. Black, Mr. Whitelock, Mr. Whiteley, Mr. Blackbeard, Mr. Redhead, Mr. Long, Mr. Short, Mr. Great, Mr. Small, Mr. Stout, Mr. Swift, Mr. Armstrong, Mr. Longstaff; and a host of others. The origin of some descriptive names is not easily given. The Germans have Herr Manteufel, in English, Mandevil, common as Mandeville. We have our Mr. Death, Mr. Hogsflesh, Mr. Heaviside, Mr. Turnbull, Mr. Stumpy, Mr. Dangerfield. Among these surnames may be placed appellations derived from places. In the olden time it was very usual to describe a person by reference to the locality where he lived, or whence he came. We cite some instances from ancient documents:—"John over the water;" "William at Bishopgate;" "John of the sheephouse;" "John at the castle-gate;" "John in the lane;" "Peter at the Bell;" "Thomas in the Willows;" "Stephen de Portico;" "William of London-bridge;" "Watt at the well;" "Jack at the stile." Of, in such cases, was very common, as "William of Normandy." The correspondent French term de, and the correspondent German term von, are in constant use among the French and the Germans, with whom they are a faint intimation of gentle or noble blood.

Out of these circumlocutions what we commonly mean by family names were readily formed. Thus, "John in the lane," by a very usual process of abbreviation, became John Lane; and "Peter at the Bell," Peter Bell. Here you have one very abundant source of prevalent English names. Sometimes the names of persons are names of countries, as, England, Ireland, Bourgoyne, France, Holland, Man; sometimes they are adjectives derived from the names of countries, as, Scott, Welsh, Dean. Our several counties give us names of persons in Cheshire, Kent, Somerset, Hertford. We derive such names, also, from cities, towns, villages, rivers, and other parts, as, London, Warwick, Leicester, Hartfield, Balcomb, Hurst, Coombs, Croft, Thorpe, Hill, Down, Derwentwater, Trent, Calder, Beck and Beckett, Banks, Barrow, Gill, Grave, Halliwell. Trees, also, and their productions, have supplied us with names. Sometimes ton (town, *residence*) is united with such names, and with names of places, as, Ashton, Milton, &c. A play on the name Berry is found in the following epitaph:—

> Hark! how! who's buried here?
> *John Berry*, is't the younger?
> No, it is the *Elder*-Berry.
> An *Elder-Berry* buried surely must
> Rather spring up and live than turn to dust:
> So may our *Berry* whom stern death has slain,
> Be only *buried* to rise up again.

LESSONS IN GERMAN.—No. XLIV.

Section XCV.

Hören (to hear), followed by auf with an accusative, signifies, to listen to; as, er hört auf das, was ich ihm sage; he listens to what I tell him.

Hören, however, when connected with auf, as a mere *prefix*, signifies, to cease, to discontinue; as, Es hört auf zu regnen; it stops raining (ceases to rain.) Der Regen hört auf; the rain ceases.

I. Aber, in the phrase, Hunderte und aber Hunderte, Tausende und aber Tausende, &c., signifies, "yet again, yet more, still other." So, also, O weh und aber weh dem Mann; O wo and yet again wo to the man.

II. Zu Grunde gehen, to go to the ground, or to the bottom, i. e., to sink; to founder, has hence the general signification, to go to ruin, or be destroyed. So, also, zu Grunde richten, to destroy, to ruin, &c. Ex: Das Schiff ist mit Mann und Maus zu Grunde gegangen, (Sprichwort); the ship with man and mouse has perished (gone to the bottom.) Unvorsichtige Speculationen haben den Kaufmann zu Grunde gerichtet; imprudent speculations have effected the ruin of the merchant.

Exercise 98.

Abendbrod, *n.* supper; Aufhören, (See above); Breslau, *n.* Breslau; Dulden, to bear, suffer, tolerate; Erlegen, to slay, kill; Faustrecht, *n.* club-law, sword-law; Gebrauch, *m.* usage, custom, fashion; Gereichen, to lend, turn to, conduce; Grab, *n.* grave; Habsburg, *n.* Hapsburg (original house of the imperial family of Austria); Hafen, *m.* harbour, port; Lächeln, to smile; Landen, to land, come to shore; Linde, *f.* linden-tree; Mittagsmahl, *n.* dinner; Osten, *m.* East; Rath, counsel; dazu kann Rath werden, that may be done, or it may happen; Regensburg, *n.* Ratisbon; Reich, *n.* empire, kingdom, realm; Reichstag, *m.* imperial diet, diet; Schande, *f.* shame, disgrace, infamy; Segel, *n.* sail; Tagesgeschäft, *n.* business of the day; Ufer, *n.* bank, shore; Verrichten, to do, perform; Verschwenderisch, prodigal, lavish, profuse; Versinken, to sink; Verzagen, to faint, lose courage; Zwistigkeit, *f.* discord, dissension, quarrel.

Höret auf des Lebens Teppich vor mich auszubreiten, ich bin elend und gefangen. (Schiller.)

Cease to spread life's carpet out before me; I am miserable and imprisoned.

Sobald er dieses sah, hörte er auf zu spielen.

As soon as he saw this, he ceased to play (stopped playing.)

Liebig gehört zu den gelehrtesten Männern Deutschlands.	Liebig belongs to (is among) the most learned men of Germany.
Er ging nicht eher aus, als bis er eine Stunde gelesen hatte.	He did not go out before (till) he had read an hour.
Der russische Feldzug richtete die "Grande Armée" (wie man sie zu nennen pflegte) zu Grunde.	The Russian campaign ruined (destroyed) the "Grand Army," (as it used to be called.)
Bei dem russischen Feldzuge ging die "Grande Armée" zu Grunde.	In the Russian campaign the "Grand Army" was destroyed.
Tausende und aber Tausende kamen um ihr Leben.	Thousands upon thousands lost their ives.
Als ich ankam, las er eben meinen Brief.	As I arrived he was just reading my letter.
Das gereicht ihm zur großen Ehre.	That redounds greatly to his honour.

1. Als Rudolph von Habsburg Kaiser von Deutschland geworden war, hörten die innern Zwistigkeiten und das sogenannte Faustrecht in diesem Reiche auf. 2. Nachdem sie einige Hirsche erlegt hatten hörten sie auf zu jagen. 3. Es hört auf zu regnen, und wir können nun unsere Reise weiter fortsetzen. 4. Mein Bruder ist zu Hause, er liegt schon acht Tage zu Bette. 5. In Deutschland sind andere Sitten und Gebräuche als in Amerika. 6. Zu Regensburg wurden in der letzten Zeit die Reichstage gehalten. 7. Die hohe Schule zu Breslau gehört zu den besten in Deutschland. 8. Als wir hinkamen speisten sie gerade zu Mittag. 9. Sie pflegten nicht eher ihr Abendbrod zu essen, als bis sie alle Tagesgeschäfte verrichtet hatten. 10. Unter einer alten Linde, welche in dem Hofe stand, hielten sie im Sommer, bei schönem Wetter, ihr Mittagsmahl. 11. Als die Cholera in Paris herrschte, starben Tausende und aber Tausende an derselben. 12. Die Soldaten ziehen zu Felde. 13. Bei dem letzten Sturme sind mehrere Schiffe zu Grunde gegangen. 14. Der Bettler geht von Thür zu Thür und von Dorf zu Dorf. 15. Das gereicht mir zur Ehre, ihm zur Schande. 16. Mir zu Gefallen könnten Sie es thun. 17. Der Feind steuert mit allen Segeln nach Osten zu. 18. Das ist für ihn zu gut. 19 Ich bin nur zu gewiß, daß es so kommen wird. 20. Es kann auch dazu Rath werden, wenn wir erst unsere eigenen Angelegenheiten geordnet haben werden. 21. Das Leben ist, Freund, ein ernstes Geschäft, —dulde sein Ungemach;—so nur wird dir die Reise sanft. 22. Endlich landest du doch sicher am Ufer, in deinem Hafen; er heißt das Grab. 23. Er hat sein und seiner Freunde Vermögen zu Grunde gerichtet. 24. Er hat bei diesen Arbeiten seine Gesundheit zu Grunde gerichtet. 25. Nelson richtete die französische Flotte zu Grunde. 26. Wenn er nicht vorsichtig ist, so kann in kurzer Zeit sein ganzer Reichthum zu Grunde gehen.

1. Are you listening to what I tell you? 2. Yes, I am listening to what you say. 3. Do you think that he will listen willingly to that proposal? 4 If you listen to what the teacher tells you, you will acquire knowledge. 5. Can we remain with you until the storm has ceased? 6. As soon as the rain ceases, we shall continue our journey. 7. As soon as we saw our teacher, we stopped playing and began to write. 8. Hundreds upon hundreds lost their lives by the revolution in France. 9. After his imprudent speculation had ruined him, he became more careful. 10. It redounds to the honour of a king, to govern his dominion in peace. 11. Do not despair, when fortune does not smile on thee, or even when thou art sunk in the deepest misery;—for it may happen ere thou thinkest it, that thou mayest be providentially disburdened of all thy troubles.

Section XCVI.

Werth (worth), like its equivalent in our language, is used in designating the value of things; as, Dieses Pferd ist dreihundert Gulden werth; this horse is worth three hundred florins. When, however, the amount of one's wealth is referred to, some phrase like the following is employed: Er hat ein Vermogen van zehn Tausend Gulden; or, Er hat zehn Tausend Gulden imvermogen, he is worth ten thousand.

I. Auskommen, (a coming or getting out) with haben, forms the phrase, Ein Auskommen haben, to have a competency or subsistence; as, In diesem Lande hat der Arbeiter ein gutes Auskommen, während er in den meisten Ländern Europa's nur ein nothdürftiges hat; in this country the labourer has a good subsistence, while in (the) most countries of Europe, he has only a scanty (one).

II. Unterkommen = coming under, i. e. a lodging, a shelter; also, an employment. Ex.: Wir suchten in irgend einem der vielen Gasthäuser dieser Stadt vergebens ein Unterkommen; we sought in vain, in any one of the many inns of this town, a shelter. Der Fleißige findet überall ein Unterkommen; the industrious finds everywhere employment.

Exercise 99.

Auskommen, (See I.)	Menschlich, human,	Unmöglichkeit, *f.* impossibility;
Eins, (one thing);	founded in human	Unterkommen, to find
Erholung, *f.* refreshment, recreation;	nature;	employment, shelter, &c. (See II.);
Fort'gehen, to go away;	Nachsicht, *f.* forbearance, indulgence;	Verleben, to live, pass, spend;
Gönnen, to grant, favour, permit;	Nothdürftig, scanty, necessitous, needy;	Verzeihung, *f.* pardon, forgiveness;
Herniederkommen, to come down;	Schein, *m.* shine, light;	Vorfallen, to happen;
Kreis, *m.* circle, sphere;	Stören, to trouble, disturb;	Warnen, to warn of, admonish against.
Manchmal, often, frequently, sometimes;	Trost, *m.* consolation;	
	Trotz, in defiance, in spite of;	

Ein kluger Feldherr gönnt seinen Soldaten zuweilen eine Erholung.	A judicious general sometimes grants his soldiers (a) recreation.
Einmal hat der Schiffer eine ruhige, dann wieder eine stürmische Reise.	At one time the mariner has a quiet (pleasant), then again a stormy voyage.
Er hat kein Vermögen dazu, um diesen Aufwand lange Zeit bestreiten zu können.	He has no fortune by which (thereto) to be able (for a) long time to afford this expenditure.
Weisheit ist mehr werth als Reichthum.	Wisdom is more valuable (worth more) than riches.
In der Schweiz hat der Bauer ein besseres Auskommen, als in dem größeren Theile Italiens.	In (the) Switzerland the peasant has a better subsistence than in the greater part of Italy.
Bei Einbruch der Nacht suchte er in einem kleinen Oertchen ein Unterkommen.	On the approach (invasion) of the night, he sought shelter in a little hamlet (little place).
Der Kaufmann hat dem Capitän bereits die Fahrt bezahlt.	The merchant has already paid the captain (for) the passage.
Mich hat herzlich verlangt, das Osterlamm mit euch zu essen. Lucas 22. 15.	I have heartily desired to eat this passover with you. Luke 22. 15. (Marginal reading.)
Das verlassene Kind verlangt nach seiner Mutter.	The forsaken child longs for (after) its mother.

1. Es giebt im menschlichen Leben zuweilen trübe Augenblicke. 2. Man muß zuweilen dem Geiste ein Erholung gönnen. 3. Er ist schon manchmal hier gewesen. 4. Schon manchmal habe ich dieses gesagt. 5. Manchmal mißlingt es auch. 6. Es ist jetzt keine Zeit dazu, spazieren zu gehen. 7. Er hat hinlänglich Zeit dazu diese Arbeit noch heute zu vollenden. 8. Er hat einen andern Tag mehr Zeit dazu, dich zu besuchen. 9. Dieses Haus ist tausend Thaler werth. 10. Mein Rock ist zehn Thaler werth. 11. Jener Mann ist fünf hundert Thaler. 12. Er ist zehn tausend Thaler. 13. Diese Familie hat ihr gutes Auskommen. 14. Jener arme Taglöhner hat nur ein nothdürftiges Auskommen. 15. Es kamen so viele politische Flüchtlinge an, daß sie nicht alle unterkommen konnten. 15. Die Soldaten fanden in den Scheunen und Ställen der Bauern ein Unterkommen. 17. Gestern habe ich dem Kaufmanne seine Rechnung bezahlt. 18. Er hat dem Schneider noch nicht den Rock bezahlt. 19. Er vergaß, dem Schuhmacher die Stiefeln zu bezahlen. 26. Der Kranke verlangt ein Glas Wasser. 21. Mich verlangt zu wissen, was an der Sache ist. 22. Mich verlangt, eine heitere Stunde im Kreis der lieben Meinen zu verleben. 23. Ich verlange das Buch, das dort liegt. 24 Eins bitte

ich dich: sei vorsichtig in der Wahl deiner Freunde. 25. Der Mann hat um Geduld und Nachsicht. 26. Da er ihn um Verzeihung bat, so konnte er nicht länger zürnen. 27. Ich bitte Sie um ein Glas Wein.

1. My house is worth a thousand francs, but that of my brother is fifteen hundred. 2. That banker is worth a thousand pounds more than that sum. 3. Contentment is of greater value than all the riches of the world. 4. We could not anywhere find shelter on our arrival in America, as all the inns were full. 5. Every one who goes to Australia may find employment. 6. Those who have a scanty competency, are sometimes the tools of the greatest crimes. 7. My brother bids me to be patient and forbearing. 8. He seeks my forgiveness, and therefore I cannot longer be angry with him. 9. Necessity requires that we should sometimes grant our body relaxation. 10. As he forgot to pay for his coat, the tailor requested him to pay.

Section XCVII.

Bemühen = to trouble. Sich um Etwas, or für Jemand bemühen, to give one's self trouble about, to take pains, strive about any thing, or for any one. Ex.: Darf ich Sie bemühen mir das Buch zuzureichen? May I trouble you to reach me that book? Du bemühst Dich zu viel um eine so geringe Sache; you trouble yourself too much about so trifling a thing. Ein Freund sollte sich für einen Freund bemühen; a friend should take pains for a friend. Es giebt gewisse gutmüthige Leute, die sich mehr für Andere, als für sich selbst bemühen; there are certain good-natured people, who take more pains for others than for themselves.

I. Zeitvertreib (from Zeit, *time*, and vertreiben, *to drive* or *pass away*,) signifies "a pastime;" as, was ihm Zeitvertreib ist, macht mir Langeweile; what to him is pastime, causes me weariness. Sich die Zeit vertreiben, to spend, or pass one's time; as, wie vertreibt er sich die Zeit? How does he pass his time? Er vertreibt sich dieselbe mit Jagen und Fischen; he spends it (the same) in hunting and fishing.

Exercise 109.

Abwesenheit, *f.* absence;
Ausbruch, *m.* breaking out, eruption;
Bemerkung, *f.* remark, notice;
Berühmt, famous, renowned, celebrated;
Blatt, *n.* paper, leaf;
Durchlesen, to read over, peruse;
Etwa, about, nearly, perhaps;
Fechten, to figlit;
Grimm, *m.* fury, rage, wrath;
Lebkuchen, *m.* gingerbread;
Nürnberg, *n.* Nuremberg;
Revolution, *f.* revolution;
Scherzen, to jest, joke, sport;
Verfolgen, to pursue, persecute;
Versteigerung, *f.* auction;
Verwagen, to hazard, venture (out);
Vorstellen, to represent, introduce, personate;
Zeitvertreib, *m.* (See I.)

Zum Zeitvertreib begießt sie ihre Blumen im Garten.	For pastime she waters her flowers in the garden.
Durch diese Mittheilungen machte er seinem gepreßten Herzen Luft.	Through these communications he gave his oppressed heart vent.
Rußland hat sich nicht vergeblich bemüht, die Bewegungen in Europa zu unterdrücken.	Russia has not striven in vain to suppress the agitation in Europe.
Die Leipziger Messe ist eine der bedeutendsten in ganz Deutschland.	The Leipsic fair is one of the most important in all Germany.

1. Bei dem Ausbruche der Revolution in Berlin wurde bis in die Nacht hinein gefochten. 2. Er gab ihm das Buch mit der Bitte, es rein zu halten. 3. Es ist ihm gestern ein Brief zugeschickt worden. 4. Ich zeigte ihm die neuen Gemälde, die ich auf der Versteigerung gekauft hatte. 5. Musik ist sein liebster Zeitvertreib. 6. Er singt, scherzt und lacht zum Zeitvertreib, anstatt sich mit ernsten Dingen zu beschäftigen. 7. Des Morgens, (Sect. 35. III.) Mittags und Abends gehe ich oft spazieren. 8. Sie verfolgten den Feind bis an (Sect. 58. Note.) die Grenzen des Landes. 9. Bis an diese Stelle hatte sie das Buch durchgelesen. 10. Bis an diesen Ort wagten sie sich vor, aber weiter nicht. 11. Er bemühte sich vergebens die Frage zu lösen. 12. Sie bemühten sich um die Gunst ihres Herrn. 13. Er bemüht sich Reichthümer zu erwerben. 14. Ich bin etwa fünf Jahre hier (in dieser Stadt). 15. Ich bin seit einer halben Stunde hier (in dem Zimmer). 16. Ist Jemand während meiner Abwesenheit hier gewesen? 17. Herr N. war hier und wollte Sie sprechen. 18. Ein Berliner Blatt macht uns folgende interessante Mittheilung. 19. Die Nürnberger (§ 13. Note) Lebkuchen sind durch ganz Deutschland berühmt. 20. Das Heidelberger Faß ist wegen seiner Größe bekannt. 21. Ich empfehle mich Ihnen, mein Herr. 22. Empfehlen Sie mich Ihrer Familie. 23. Er empfahl sich der Gesellschaft. 24. Da der alte Jäger seinem Grimm nicht anders Luft zu machen wußte, so schlug er seine Hunde.

1. My friend sent me a book, with the hint to peruse it. 2. I have perused your book as far as the second chapter. 3. A parcel was sent to me yesterday. 4. Study is my most agreeable pastime. 5. In the morning I study, and in the evening I teach my scholars. 6. We need not trouble ourselves on account of our friend: he does not need our assistance. 7. During the absence of our teacher we played instead of learning. 8. How long have you been in London? 9. I have been nearly three years here. 10. Was my brother here during my absence? 11. No, he was not here. 12. May I trouble you to write me this letter? 13. A diligent boy strives to acquire knowledge.

LESSONS IN FRENCH.—No. LIV.

By Professor Louis Fasquelle, LL.D.

§ 44.—Conjugations.

(1.) The French verbs are divided into four large classes or conjugations:—

1st. The first conjugation comprises all verbs of which the present of the infinitive ends in ER; as parler, *to speak*; aimer, *to love*, &c.

2d. The second conjugation embraces all those of which the infinitive ends in IR; as chérir, *to cherish*; punir, *to punish*, &c.

3d. The third conjugation contains all the verbs which, in the infinitive, end in OIR; such as recevoir, *to receive*; pouvoir, *to be able*, &c.

4th. The fourth conjugation comprises all the verbs terminating with RE in the infinitive; as rendre, *to render*; prendre, *to take*, &c.

(2.) The verbs are again divided into regular, irregular, and defective:—

1st. The regular verbs are those which, in all their tenses, are conjugated like the *model verb* of the conjugation to which they belong.

2d. The irregular verbs are those which are not conjugated like the *model verb*.

3d. The defective verbs are those which want certain tenses or persons.

§ 45.—Modes and Tenses.

(1.) There are six modes: the indicative, the conditional, the imperative, the subjunctive, the infinitive, and the participle:—

1st. The indicative, whatever may be the tense, indicates or declares in a positive, absolute manner: j'abandonne. *I abandon*; j'ai abandonné, *I have abandoned*; j'abandonnerai, *I will abandon*.

2d. The conditional indicates a condition or a supposition: j'abandonnerais si . . . . *I would abandon if* . . . .

3d. The imperative is used to express a command, prayer, or exhortation: abandonnez cet enfant, *abandon that child*.

4th. The subjunctive is used after propositions expressing doubt, contingency, or necessity: il est douteux que je l'abandonne; *it is not certain that I may abandon him*.

5th. The infinitive presents the signification of the verb in an unlimited manner: abandonner ses enfants, *to abandon one's children*.

6th. The participle, while retaining the power of the verb, at the same time partakes of the nature of an adjective: abandonnant ses parents, *abandoning his relatives*; abandonné de ses enfants, *abandoned by his children*.

(2.) The indicative has eight tenses:—

1st. The present: je parle, *I speak*; je donne, *I give*.
2d. The simultaneous past, or imperfect; je parlais, *I was speaking*.
3d. The past definite: je parlai, *I spoke, I did speak*.
4th. The past indefinite: j'ai parlé, *I have spoken*; j'ai donné, *I have given*.
5th. The past anterior, j'eus parlé, *I had spoken*.

6th. The pluperfect,	j'avais parlé,	*I had been speaking.*
7th. The future absolute,	je parlerai,	*I shall, will speak.*
8th. The future anterior, or future perfect,	j'aurai parlé,	*I shall have spoken.*

(3.) The conditional has two tenses :—

1st. The present or future,	je parlerais,	*I should, would speak.*
2d. The past,	j'aurais parlé,	*I should have spoken.*

(4.) The imperative has one tense :—

The present,	parle,	*speak.*

(5.) The subjunctive has four tenses :—

1st. The present or future,	que je parle,	*that I may speak.*
2d. The imperfect,	que je parlasse,	*that I might speak.*
3d. The past indefinite,	que j'aie parlé,	*that I may have spoken.*
4th. The pluperfect,	que j'eusse parlé,	*that I might have spoken.*

(6.) The infinitive has two tenses :—

1st. The present relative,	parler,	*to speak.*
2d. The past,	avoir parlé,	*to have spoken.*

(7.) The participle has three tenses :—

1st. The present relative,	parlant,	*speaking.*
2d. The past active,	ayant parlé,	*having spoken.*
3d. The past or passive,	parlé,	*spoken.*

(8.) Tenses are simple or compound.

1. Simple, when they are expressed in a single word : je parle, *I speak.*

2. Compound, when they require the assistance of the verb avoir or être : j'ai parlé, *I have spoken*; je suis arrivé, *I am arrived.*

§ 46.—USE OF THE AUXILIARY VERBS AVOIR AND ETRE.

(1.) The auxiliary *avoir* is used :

1. In the conjugation of its own compound tenses : j'ai eu, *I have had.*

2. In the conjugation of the compound tenses of the verb être : j'ai été, *I have been.*

3. In the compound tenses of the active verbs : j'ai aimé, *I have loved.*

4. In the compound tenses of most neuter verbs expressing an action : j'ai marché, *I have walked.* [See exceptions to this rule (3) below.]

5. It is also used in the conjugation of verbs which are always unipersonal : il a plu, *it has rained* : il a grêlé, *it has hailed*, &c.

(2.) The verb *être* is used in the conjugation of :

1. All the tenses of passive verbs : je suis aimé, *I am loved.*

2. The compound tenses of all reflective or pronominal verbs : je me suis flatté, *I have flattered myself*; je me suis promené, *I have walked.*

3. The compound tenses of the following neuter verbs, though the same, express action—

aller,	*to go*	naître,	*to be born*
arriver,	*to arrive*	tomber,	*to fall*
choir,	*to fall*	venir,	*to come*
décéder,	*to decease*	parvenir,	*to succeed*
mourir,	*to die*	devenir,	*to become,*
revenir,	*to return.*		

4. A few unipersonal verbs, which are not always but occasionally such : il lui *est* arrivé un malheur, *a misfortune has happened to him.*

(3.) A certain number of neuter verbs : as—

accourir,	*to run towards*	entrer,	*to enter*
disparaître,	*to disappear*	sortir,	*to go out*
croître,	*to grow*	passer,	*to pass*
cesser,	*to cease*	partir,	*to depart*
périr,	*to perish*	vieillir,	*to grow old*
monter,	*to mount, to ascend*	grandir,	*to grow*
descendre,	*to go down*	rester,	*to remain, to dwell*

take sometimes *avoir*, and sometimes *être.*

1. They take *avoir* when we have in view the action expressed by the verb ;

2. And *être* when situation or condition is the principal idea which we wish to express :—

EXAMPLES.

With AVOIR.	*With* ETRE.
Elle *a* disparu subitement. *She disappeared suddenly.*	Elle *est* disparue depuis quinze jours. *She has been gone a fortnight.*
La fièvre *a* cessé hier. *The fever ceased yesterday.*	La fièvre *est* cessée depuis quelque temps. *It is some time since the fever ceased.*
Le baromètre *a* descendu de plusieurs degrés en peu d'heures. *The barometer went down several degrees in a few hours.*	Il *est* descendu depuis une heure. *He has been down one hour.*
Il *a* passé en Amérique en tel temps. *He went to America at such a time.*	Les chaleurs *sont* passées. *The heat is past.*
Le trait *a* parti avec impétuosité. L'ACADEMIE. *The dart went with impetuosity.*	Les troupes *sont* parties depuis six mois. L'ACADEMIE. *The troops have been gone six months.*
Le sang *avait* cessé de couler. BOISTE. *The blood had ceased to flow.*	Ce grand bruit *est* cessé. MME. DE SEVIGNE. *That great noise is over (has ceased).*

(4.) Rester and demeurer, meaning *to dwell, to reside*, take the auxiliary *avoir* ; when they mean *to remain, to be left*, they take *être* :—

AVOIR.	ETRE.
J'*ai* resté plus d'un an en Italie .... MONTESQUIEU.	Elle donnerait pour vous sa vie, le seul bien qui lui *soit* resté. MARMONTEL.
I resided more than a year in Italy	*She would give, for you, her life, the only possession which remains to her.*
Il *a* demeuré deux ans à la campagne. L'ACADEMIE.	Deux cents hommes *sont* demeurés sur le champ de bataille. L'ACADEMIE.
He lived (dwelt) two years in the country.	*Two hundred men remained on the field of battle.*

(5.) Echapper, *to escape, to pass unnoticed, to be forgotten*, takes the auxiliary *avoir*. In the sense of, *to say inadvertently*, it takes *être.*

AVOIR.	ETRE.
Cette différence ne m'*a* pas échappé. ROUSSEAU.	Ce mot m'*est* échappé; pardonnez ma franchise. VOLTAIRE.
That difference has not escaped me.	*That word escaped my lips ; excuse my frankness.*
J'ai retenu le chant, les vers m'*ont* échappé. VOLTAIRE.	Excusez les fautes qui pourront m'*être* échappées. BOILEAU.
I retained the tune, but the verses have escaped my memory.	*Excuse the faults which I may have committed inadvertently.*

(6.) Convenir, *to become, to suit*, takes *avoir*. When it is used in the sense of *agreeing*, or *settling upon a price* for an article, it takes *être.*

Cette maison m'*a* convenu.	Nous *sommes* convenus du prix. L'ACADEMIE.
That house suited me.	*We agreed upon the price.*

LESSONS IN NATURAL HISTORY.—No. XVII.

THE SABLE—THE ICHNEUMON

(*Order* CARNIVORA.)

OUR last two lessons on Natural History were on the principal animals of the *Weasel* tribe, but there remains another which must not be allowed to pass unnoticed,—it is the Sable. The chief residence of this animal is in Asia, beginning at the Uralian mountains, and becoming increasingly plentiful in the progress eastward. The sable is frequently found in Kamschatka, and also in the Kurile isles. It prefers vast forests, especially those of fir-trees.

The head of the sable is small and oval, with long whiskers, and short round ears. The feet are large, each having five toes furnished with white claws, which are short, hooked, and very hard pointed. The tail is somewhat bushy ; it is five inches long, but the hair extends it to eight inches. The body is nearly of equal diameter throughout, and in the proper season is thickly covered with hair, which extends to the extremity of the toes, and even under them. Its colour is black at top and cinerous—that is having

the colour of wood-ashes—at the bottom; the throat is cinerous, sometimes white, yellow, or spotted, and the edges of the ears are yellowish.

Sometimes the sable forms nests in the trees, and skips, with great agility, from one to the other; but commonly it lives beneath their roots or in holes in the earth. It generally sleeps in the day, but if the weather be clear and fine, and only then indeed, it prowls abroad, seeking its prey. In summer, weasels, squirrels, and hares are its victims; but in winter, birds, and especially partridges. Fruit and berries form the principal part of its subsistence during autumn; but it will eat fruit at other times, preferring that of the service-tree. When pressed with hunger, the sable will follow the bear and the wolf, and regale itself on what those animals leave.

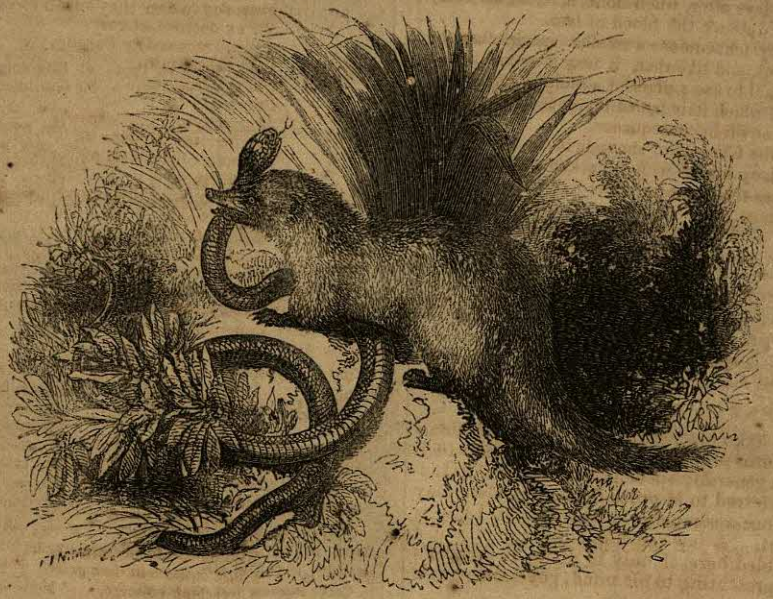
The fur of the sable is of special value. A skin varies in worth from one to ten pounds, according to the quality. The time of the year, and the age and state of the animal when killed, occasion this difference. A single skin is said to have been sometimes sold for fourteen or fifteen pounds. The fur is esteemed according to the darkness of the colour. From November to February the fur is darkest, and in the best condition.

The finer kinds of sable skins are sold without the under part, or that part next the ground, which has a fur of lighter hue than the rest of the body; but this part is allowed to remain in the coarser sorts. Tails are sold by the hundred. The very best skins must have the tails, but common ones are often cropped. The hair of the same skins differ in length and quality. The longer hair is silky, and the shorter or under hair is woolly. The more a skin has of the former, and the less of the latter, the colour being at the same time good, the more valuable it is. But the very best skins have scarcely any other than the long silky hair. Other things being equal, the furriers prefer the skins which are largest and have the best gloss. They describe the fresh ones as having a "*bloomy* appearance," and the old ones as having "*done blooming.*"

The chase of the sable is one of the most painful and arduous labours which can fall to the lot of man. Yet many engage in it. It is in winter that the pursuit takes place; for then, as we have seen, the fur is the finest and most valuable. The hunters form themselves into parties sometimes to the number of forty. These are subdivided into smaller parties, each of which has a leader; but one person directs and controls the whole. Each party is provided with a small covered boat, laden with provisions; they are also furnished with a vessel to bake their bread in; and there is a dog and a net to every two men. Every party sets out in the direction prescribed by the leader, going against the stream of the rivers, drawing their boats up until they arrive in the hunting country, then stopping, building themselves huts, and remaining there until the rivers are frozen, and the season commences.

Now they press onwards over frozen plains where many a tempest sweeps into the bosom of mighty woods, and where they only of human kind animate the bleak and savage scene. Night and day they follow the tracks of the animals over the snow with enduring perseverance. Various are the means they use for capturing their prey. Some are caught in traps, some are pursued to their retreats, and nets are placed over the entrance, and some are shot with single ball. Sometimes recourse is had to the following practice. A piece of wood is placed horizontally from tree to tree, and near one end of it a bait is fixed. Over this piece of wood another is suspended obliquely, one end slightly resting on a post, and a rod extending from it to a noose, to which the bait is fastened. As soon as the bait is seized, the upper timber falls and kills the sable. Most perilous, however, is the chase of this animal. Fatigue and cold exhaust the hunter; a storm of snow overtakes him; the bearings or way-marks are lost or forgotten; provisions fail; and too often, unhappily, he whose speedy return is anticipated by his family, is seen by them no more.

The Ichneumon, of which the following is an engraving, is another remarkable specimen of the carnivora. It is peculiar to



THE ICHNEUMON.

Egypt, and was placed in ancient days, owing to the real or supposed benefits it confers, among the most sacred animals of the Egyptian worship. As the Nile periodically overflows that country, and, at all times, flows through a low humid tract of mud, covered with reeds and flags, on which a burning sun is perpetually acting, reptiles abound of terrific forms and in immense multitudes. The special service, therefore, rendered to the people by the ichneumon is the destruction of these creatures.

Lucan, in his poem of Pharsalia, written about the year 62 of the Christian era, thus describes its combat with the Egyptian asp, a serpent whose bite is deadly:—

> "Thus oft the ichneumon, on the banks of Nile,
> Invades the deadly aspic by a wile;
> While artfully is slender tail is played,
> The serpent darts upon the dancing shade;
> Then, turning on the foe, with swift surprise,
> Full on the throat the nimble seizer flies;
> The gasping snake expires beneath the wound,
> His gushing jaws with poisonous floods abound,
> And shed the fruitless mischief on the ground."

Nor is this the only way in which the ichneumon aids the Egyptian people; for it destroys the eggs of reptiles by thousands, the recently hatched young and all the smaller kinds literally by *wholesale.*

Setting out on its rambles in the evening, it steals silently along with the utmost vigilance and caution, examines every lurking place it can find, peeps into every crevice or recess, alike conscious of its own danger and intent on its prey.

The ichneumon is agile and graceful in all its movements. In size it is something larger than a cat. Its fur is of a uniform silvery grey, the tip of the tail being black; but each hair of the body, if separately examined, will be found ringed with white, dark, and fawn colour. Its eyes are small, red, and sparkling; it often sits up like a squirrel in feeding; and its voice is soft and murmuring. When irritated, or about to spring on its prey, its hair becomes erect, its eyes vivid, and its whole aspect is eager and ferocious.

The ichneumon is easily domesticated. One of these creatures was brought up by M. d'Obsonville. He fed it at first with milk, and afterwards with baked meat mixed with rice. It was soon tamer than a cat; for it came when called, and followed its master, though at liberty, into the country. On a small water serpent being put to it alive, its first feeling appeared to be one of astonishment mixed with anger, for its hair became erect. The next instant, it slipped behind the reptile, and with remarkable swiftness and agility leaped on its head, seized it, and crushed it with its teeth. Its voracity, which had only slumbered, was now aroused. Several curious fowls had been about the house, and these it had suffered to go unmolested; but a few days after, when alone, it strangled every one of them, ate a little and drank the blood of two.

In India there is the grey ichneumon, a smaller species than the Egyptian, but very beautiful, and like that, it may become gentle and domesticated. It is said to use a plant as a remedy against the poisonous bite of serpents, which it is famed for encountering, and this antidote has become known in consequence.

Another species, called the Gurangan, abounds in the teak forests of Java. It is said to destroy snakes with remarkable address. As the reptile attacked involves the gurangan in its folds, the creature inflates its body to the utmost, but rapidly contracting when the snake is about to bite, it slips through the twining length of the reptile, seizes it by the neck, and effects its destruction.

LESSONS IN LATIN.—No. XLIX.

By John R. Beard, D. D.

GOVERNMENT BY PREPOSITIONS.

Government may also take place by means of prepositions. The significations of Latin prepositions, and the cases which they require, have been generally spoken of in Lesson XIII.

The subject is here referred to in order that the student may have under his eye at once a complete view of what in Latin is involved in government. A few remarks and examples of a critical kind may be added here, if only to renew the reader's impression, and aid in presenting to his mind, government as a whole.

Prepositions, originally, have reference to place. Other references are derivative. Prepositions assist in making clearer the distinctions and definitions which in Latin are in a general way indicated by the oblique cases, that is, all the cases but the nominative. Thus, we may say, versatur hoc loco, *he moves about in this place*, but if we wish to mark the spot more particularly, we say, versatur *in* hâc urbe, *he moves about in this city*.

The usages of prepositions in Latin are very various; they can scarcely be reduced to rule, nor can some of them be explained on general principles. There is no resource but to study separate instances, and, while imitating them, observe and apply the general doctrines already set forth.

The relation of a substantive to a substantive, which is expressed in English by the preposition of, as, *the head of the man, the words of the book*, is in Latin expressed not by a preposition, but by the genitive case, e. g., hominis caput; verba libri. There are instances in which the noun has a kind of verbal force, and so dispenses with the use of prepositions. Thus, we find in good authorities these examples:—

Mansio Formiis, *the stay at Formiae*; refrigeratio aestate, *cooling in summer*; civili bello victor, *conqueror in the civil war*. In other instances prepositions are used with verbal nouns, e. g., reditus in coelum, *return to heaven*; adventus ad urbem, *approach to the city*; despectus in mare, *the look-down into the sea*; excessus e vitâ, *departure from life*; ex Italiâ itinera in Macedoniam, *the ways from Italy into Macedonia*; castra ad Bagradam, *the camp near Bagrada*; Caesaris in Hispaniâ res secundae, *Caesar's success in Spain*; omnes ante Socratem philosophi, *all the philosophers before Socrates*; ex Indiâ elephanti, *elephants from India*.

Let the following examples of the use of prepositions be carefully observed and followed:—

Malus poeta de populo.
A bad poet from among the people.
De genere summo adolescens.
A youth of the highest promise
Si per me licuisset.
If I had allowed.
Per deos te oro.
I entreat thee by the gods.
Praeter consuetudinem.
Beyond what is usual.
Ab equitatu firmus.
Strong in cavalry.
Alterum de duobus.
One of two.
Ex adolescentiâ.
From (since) the period of youth.
Diem ex die.
From day to day.
Vir ex doctrinâ clarus.
A man renowned for learning.
Prae nobis beatus.
Happier than we.
Pro curiâ.
In front of the senate-house.
Pro dignitate laudare.
To praise conformably to dignity.
Verbo tenus.
So far as the word was concerned.
Signa ex aere.
Standards made of brass.
Mensae Delphicae e marmore.
Delphic tablets of marble.
Bellum in Romanos.
War against the Romans.
Imperium in Hispaniam.
Command over Spain.
Soror ex matre.
A sister on the mother's side.
Ira ex hâc clade.
Anger arising from that defeat.
Merita Plancii erga me.
Plancius's merit toward me.
Metus de summâ rerum.
Fear for the general safety.
Praeter spem mora.
Unexpected delay.
Mihi ad forum negotium est.
I have business in the market.
Ad verbum ediscere.
To learn word for word.
Coenam apud villam dat.
He gives a dinner party at his villa.
Ter in anno.
Thrice a year.
In aram confugit.
He fled to the altar.
Te invitavit in posterum diem.
He invited thee for the next day.
In dies singulos.
Every day.
Sub dio.
In the open air.
Sub exitu anni.
At the end of the year.
Vulnus super vulnus.
Wound upon wound.
Multa super Priamo rogitans.
Asking many questions respecting Priam.
Super vinum et epulas.
At the banquet.
Nocte super mediâ.
At midnight.

If you diligently study these instances, and the exercises which follow, you will readily see how conducive to a correct knowledge of Latin is an exact and familiar acquaintance with

the import of its prepositions. You will also learn that the primitive meaning of a preposition, as represented in English, has occasionally to undergo considerable variations. The proper meaning of the preposition in, for instance, is with the accusative *toward*; but, consistently with English usages, it can by no means be always so rendered. The preposition de, too, denotes motion in a downward direction; but consult the examples, and you will find other meanings must be employed as due representatives of de in our language. Often, indeed, both in regard to propositions and other words, you must, if you would intelligibly convey the sense of the original, depart considerably from a literal rendering. A perfect translation adheres as closely to the original, both in words and in structure, as a full regard to the idiom of the language into which you are translating will allow.

Some of the prepositions are obviously compounds. Thus inter, *between*, is made up of in and ter; so praeter consists of prae and ter; propter (propiter) comes from prope and ter; subter is sub and ter; also, circiter is circa, and the same adverbial ending, ter. I give instances of the use of these compounds:—

Inter:—Inter arma silent leges.
Praeter:—Praeter oram Hetrusci maris Neapolim transmisit.
Propter:—Vulcanus tenuit insulas propter Sicilfam.
Subter:—Plato iram et cupiditatem subter praecordia locavit.
Circiter:—Caesar circiter meridiem exercitum in castra reduxit.

Some prepositions are occasionally used as adverbs; such as ante, *near*; procul, *at a distance*; juxta, *on one side, alike*; infra, *below*; supra, *above*; ultra, *beyond*; intra, *within*; extra, *without, on the outside*; contra, *over against*; circa, *round the exterior*; ante, *in front*; retro, *backwards*.

Exercises.—Latin-English.

Coronam habebat unam in capite, alteram in collo; semel in vitâ risit M. Crassus; Pausanias ceperat complures Persarum nobiles, atque in his nonnullos regis propinquos; in Epaminondae virtutibus commemoratur, saltasse eum commode; loquutus est in noctem atque etiam nocte, illatis lucernis; in crastinum differo res serias; crescit in dies singulos hostium numerus; Gallia est omnis divisa in partes tres; mihi est in mente; mihi venit in mentem; legiones sub armis habuit; saepe est sub palliolo sordido sapientia; magna mei sub terras ibit imago; captivos sub jugum misit; sub ipsa maenia progressi sunt; sub Hannibale magistro belli artes edoctus est; excesserunt urbe sub adventu Romanorum; sub haec dicta ad genua Marcelli procubuerunt; Grues dormiunt capite subter alamcondito; consul equo citato subter muros hostium ad cohortes advehitur; super tabernaculum Darii imago solis fulgebat; domos super se ipsos concremaverunt; requievit fronde super viridi; super ripas Tiberis effusus erat; super coenam de ejus nequitiâ loquebantur; nemo eorum redierat, qui super tali causâ missi erant; hae super re scribam ad te; ante et pone movetur; post me erat Aegina, ante Megara; ingredi ante non retro jussit; si fortuna volet, fies de rhetore consul; hostes ad Caesarem legatos de pace miserunt; ut jugulent homines surgunt de nocte latrones; de quartâ vigiliâ castra movet; Darius ex Asiâ in Europam exercitum trajecit; coloniam ex hostibus eripuit; tanta repente vilitas annonae ex summa inopia et caritate rei frumentariae consecuta est; diem ex die expectabam; homo ex animo constat, et corpore caduco et infirmo; majores ex minimâ republicâ maximam nobis reliquerunt; amicitias, inimicitiasque non ex re sed ex commodo aestimant mali; Hercules prae se armentum agebat; solem prae jaculorum multitudine non videre possum; Caesar pro castris suas copias produxit; hoc non modo non pro me, sed contra me est potius; Cato est mihi unus pro multis milibus; huic ille pro meritis gratiam retulit; Helvetii pro multitudine hominum, et pro gloriâ belli augustos se fines habere arbitrabantur; commodius fecissent, si, quae apud vos de me deferunt, ea coram potius, me praesente, dixissent; reliquos cum custodibus in aedem Concordiae venire jubet; ipse magnâ cum curâ et diligentiâ scripsit; multa hic sine Alcibiade gessit; Pompeius summos honores sine ullâ commendatione majorum es adeptus; aqua fluminis erat pectoribus tenus aucta; veteres verbo tenus acute de republicâ disserebant; quis toto mari locus per hos annos tam firmum habuit praesidium? cujus furta atque flagitia non in Siciliâ solum sed in Achaiâ, Asiâ, Ciliciâ, Pamphyliâ, denique ante oculos omnium, maxima turpissimaque cognovimus esse; hic suor reliquae ex Italâ legiones; liber qui est de naturâ deorum a me lectus est totus; praelium ad [illegible]nam commissum fuit sanguineum; ex praelio nuncius venit ad te; supplicia patrum in plebem, plebis in patres atrocia fuerunt; evolve eum librum qui est de animo; oratio prima in Catilinam a Cicerone habita est pulchra et potens; video differri adversus nos certamen; auxilium adversus inimicos mihi est datum; Aristoteles in tertio de philosophiâ libro multa turbat; tuae litterae de tua dignitate mihi pergratae fuerunt; magnam haec res Caesari difficultatem ad consilium capiendum afferebat; hoc crimen de statuis relinquam; domum reditionis spes est sublata; Caesar erat ad portas cum imperio; Sophocles ad summam senectutem tragoedias fecit; faciam id quod est ad severitatem lenius, ad communem salutem utilius; apud eosdem judices reus factus est; tu nihil in magno doctus reprendis Homero? apud Homerum Nestor de virtutibus suis praedicat; Caesar ad oppidum constitit, juxtaque murum castra posuit; occiso Caesare, respublica penes Brutos videbatur esse et Cassium; Ager Tarquiniorum, qui inter urbem ac Tiberim fuit, consecratus Marti, Martius deinde campus fuit; intra parietes meos de meâ pernicie consilia inita sunt; inter horam tertiam et quartam tenebrae obortae fuerant; Tusci trans Apenninum colonias miserunt; uxor Vitellii ultra feminam fuit ferox; milites Caesaris impetum adversus montem in cohortes faciunt; pietas est justitia adversum deos; mors ob oculos ejus saepe versata est; radix est contra morsus serpentium efficax; eodem modo erga amicum affecti simus, quo erga nosmet ipsos; postero die circa eandem horam in eundem locum rex copias admovit; milites dies circiter quindecim iter fecerunt; vastis circum saltibus et lucebatur; sanguis per venas in omnes partes corporis diffunditur; equites per oram maritimam erant dispositi; incendium per duas noctes tenuit; armati persilentium eo deducti sunt; Clodium nihil delectabat, quod per naturam fas esset aut per leges liceret; testis est Phalaris, cujus praeter ceteros est nobilitata crudelitas; nihil aliud est philosophia, praeter studium sapientiae; ne pater per me stetisse credat, quominus hae fierent nuptiae; Admetum abest a Z mâ milia passuum decem; Galli a tingit a Sequanis et Helvetiis flumen Rhenum; Catilinae ferrum de manu extorsimus; emi domum de Crasso; de gestu intelligo quod respondeas.

English-Latin.

Caesar spoke for several hours; the sun shines (during) the whole day; he is in England; he goes into England; thy crimes are before the eyes of all nations; these legions have come from Italy; the battle fought near the city was bloody; I have written a book on laws; Cicero wrote a book on the republic; in Aristotle, I read many true things; we have no hope of a return to the country; yesterday I wrote till ten o'clock; my love to thee is very great; in Homer there are some things which deserve blame; the general halted at the fountain; Caesar will pitch his camp near the wall; the city is in the power of bad men; the fountain is between the stable and the house; the dog is out of the stable; the soldiers will make an attack on (against) the wall; I will be at thy house about noon; so far as I am concerned (per me) thou mayest go; I have a crown on my head; every day you become wiser and better; under my teacher I have learnt many things; do souls go under the earth? souls ascend into heaven; the city speaks of his wickedness; I will send a letter to thee; my mother has sent a messenger to me; among these books there is no one for thee; the shepherd drives his flock before him; this statue is of brass, that is of silver.

LESSONS IN ALGEBRA.—No. II.

Solutions of the Exercises proposed in Lesson I.:—

(2.) $(a-h)+(b+c+d)=37m+\frac{b}{h+b}$.

(3.) $a+b:\frac{b}{c}::ac:12\,h$.

(4.) $\frac{a+b+c}{6abc}=4\{(a+b+c)-d$.

(5.) $\frac{6}{a+b}=7d-\frac{b}{36}$.

(7.) The product of a and b increased by the quotient of 3 times h minus c, divided by the sum of x and y, is equal to the product of d by a increased by the sum of b and c, and diminished by the quotient of h divided by the sum of 6 and b.

(8.) If a be added to 7 times the sum of h and x, and from this sum, the quotient of c less 6 times d, divided by the sum of twice a and 4 be subtracted, the remainder will be equal to the sum of a and h, multiplied by the difference of b and c.

(9.) The difference of a and b, is to the product of a and c, as the difference of d and 4, divided by m, is to 3 multiplied by the sum of h, d, and y.

(10.) If the quotient of the difference between a and h, divided by the sum of 3, and b less c, be added to the quotient of the sum of d and the product of a and b, divided by twice m, the whole will be equal to the quotient of b times a multiplied by the sum of d and h, divided by a times m, lessened by the quotient of c times d divided by h increased by d times m.

(13.) $\frac{4+3\times6}{2}+4\times2\times8-\frac{6\times4\times2\times10}{5\times3}=\frac{4+18}{2}+64-\frac{480}{15}=\frac{22}{2}+64-32=43.$

(14.) $4\times8+\frac{3\times4+3\times6}{6}-\frac{3\times4\times10-6\times2}{3\times2\times6}=32+\frac{12+18}{6}-\frac{120-12}{36}=32+\frac{30}{6}-\frac{108}{36}=32+5-3=34.$

(15.) $3\times4\times8+\frac{2\times4}{8-4}+2\times10=96+\frac{8}{4}+20=118.$

(16.) $(3+2)\times(10-8)+\frac{8-4}{8-6}-3=5\times2+\frac{4}{2}-3=9.$

(17.) $\frac{3\times(6+2)}{10-6}+3\times4\times2-\frac{(2+4)\times(8-6)}{10-4\times2}=\frac{24}{4}+24-\frac{6\times2}{10-8}=6+24-\frac{12}{2}=24.$

(18.) $\frac{3\times2+5\times8}{2\times10+3}+8-2\times4+\frac{(4\times6-4)\times(3-2)}{10}=\frac{6+40}{20+3}+8-8+\frac{(24-4)\times1}{10}=\frac{46}{23}+0+\frac{20}{10}=4.$

SECTION II.

ADDITION.

EXERCISE 1.—John has x marbles and gains b marbles more. How many marbles has he in all?

In this example we wish to add x marbles to b marbles. But addition in algebra is denoted by the sign +. Hence $x+b$ is the answer, i. e., John has the sum of x marbles added to b marbles.

2. What is the sum of $3b$ pounds added to the sum of c pounds and f pounds?

By algebraic notation, $3b+c+f$ pounds is the answer.

45. The learner may be curious to know *how many* marbles there are in $x+b$ marbles; and *how many* pounds in $3b+c+f$ pounds? This depends upon the *number each letter stands for*. But the questions do not decide what this number is. It is not the *object*, in adding them, to ascertain the *specific* value of x and b, or of $3b$, c, and f; but we find an algebraic expression, which will *represent* their *sum* or *amount*. This process is called *addition*. Hence

46. ADDITION *in algebra may be defined, the connecting of several quantities with their signs into one expression.*

47. *Quantities may be added, by writing them one after another, without altering their signs.*

N. B. A *quantity to which* no *sign* is *prefixed* is always to be considered *positive*, i. e., the sign + is understood (Art. 12).

EXAMPLE.—What is the sum of $a+m$, and $b-8$, and $2h-3m+d$?

$a+m+b-8+2h-3m+d$. Ans.

48. It is immaterial in what *order* the terms or letters are arranged. If you add 6 and 3 and 9, the amount is the same, whether you put the 6, the 3, or the 9 first, namely 18. But it is frequently *more convenient* and therefore *customary* to arrange the letters in alphabetical order.

49. It often happens that the *expression* denoting the *sum* or *amount*, may be *simplified* by reducing several terms to one. Thus, the expression $2a+7a+4a$, may be *abridged* by uniting the three terms into one. Thus $2a$ added to $7a$ makes $9a$, and $4a$ added to $9a$ makes $13a$, that is, $2a+7a+4a=13a$.

There are *two cases* in which *reductions* can be made.

50. CASE I.—When the *quantities* are *alike*, and the *signs alike*, as $+4b+5b$, or $-4y-3y$, &c. Find the sum of *the coefficients, annex the common letter or letters, and prefix the common sign.*

EXAMPLE 1.—What is the sum of $3a$, $4a$, and $6a$?

Here, $3a+4a+6a=13a$. Ans.

2. $3xy$	3. $7b+xy$	4. $ry+3abh$	5. $cdxy+3mg$
$7xy$	$8b+3xy$	$3ry+abh$	$2cdxy+mg$
xy	$2b+2xy$	$6ry+4abh$	$5cdxy+7mg$
$2xy$	$6b+5xy$	$2ry+abh$	$7cdxy+8mg$
$13xy$	$23b+11xy$	$12xy+9abh$	$15cdxy+19mg$

51. *The mode of proceeding is the same, when all the signs are* —.

EXAMPLE 6.—What is the sum of $-3bc$, $-bc$, and $-5bc$.

Here, $-3bc-bc-5bc=-9bc$.

7. $-ax$	8. $-2ab-my$	9. $-3ach-8bdy$
$-3ax$	$-ab-3my$	$-ach-bdy$
$-2ax$	$-7ab-8my$	$-5ach-7bdy$
$-6ax$	$-10ab-12my$	$-9ach-16bdy$

52. CASE II.—When the *quantities* are *alike*, but the *signs unlike*, that is, only one of each, as $+9b$ and $-6b$;

Take the less co-efficient from the greater; to the difference, annex the common letter or letters, and prefix the sign of the greater co-efficient.

Suppose a man's loss is £500, and his gain £2,000. The algebraic notation is $-500+2000$, i. e., £500 is to be *subtracted* from his stock, and £2,000 *added* to it. But it will be the *same* in effect, and the expression will be *greatly abridged*, if we add the *difference* between £500 and £2,000, viz., £1,500 to his stock.

10. What is the sum of $16ab$ and $-7ab$? Ans. $9ab$.

	11.	12.	13.	14.	15.
To	$+4b$	$5bc$	$2hm$	$-dy+6m$	$3k-dx$
Add	$-6b$	$-7bc$	$-9hm$	$4dy-m$	$5k+4dx$
	$-2b$	$-2bc$	$-7hm$	$3dy+5m$	$8k+3dx$

53. If several positive, and several negative quantities are to be reduced to one term; first reduce those which are positive, and next those which are negative, to one term, and then proceed as in Art. 52.

EXAMPLE 16.—Reduce $13b+6b+b-4b-5b-7b$, to one term.

Here, $13b+6b+b=20b$; and $-4b-5b-7b=-16b$;

Whence $20b-16b=4b$. Ans.

17. Add $3xy-xy+2xy-7xy+4xy-9xy+7xy-6xy$.

Here, $3xy+2xy+4xy+7xy=16xy$;

And, $-xy-7xy-9xy-6xy=-23xy$;

Whence, $16xy-23xy=-7xy$. Ans.

18. Add $3ad-6ad+ad+7ad-2ad+9ad-8ad-4ad$.

Here, $3ad+ad+7ad+9ad=20ad$;

And, $-6ad-2ad-8ad-4ad=-20ad$;

Whence, $20ad-20ad=0$. Ans.

19. Add $2abm-abm+7abm-3abm+7abm$.

Here, $2abm+7abm+7abm=16abm$;

And, $-abm-3abm=-4abm$;

Whence, $16abm-4abm=12abm$. Ans.

20. Add $axy-7axy+8axy-axy-8axy+9axy$.

Here, $axy+8axy+9axy=18axy$;

And, $-7axy-axy-8axy=-16axy$;

Whence, $18axy-16axy=2axy$. Ans.

54. If *two equal* quantities have *contrary signs*, they destroy each other, that is, the results of their addition is 0, and they may be cancelled. Thus $+6b-6b=0$. And $(3\times6)-18=0$. so $7bc-7bc=0$.

55. *If the letters, or quantities in the several terms to be added, are* UNLIKE, *they can only be placed after each other, with their proper signs.* (Art. 47.)

21. If $4b$, and $-6y$, and $3x$, and $17h$, and $-5d$, and 6, be added; their sum will be $4b-6y+3x+17h-5d+6$.

22. Add aa, aaa, to xx, xxx and $xxxx$.

Different letters, and different powers of the same letter, can no more be united in the same term, than pounds and guineas can be added, so as to make a single sum. Six guineas and four pounds are neither ten guineas nor ten pounds.

56. From the foregoing prineiples we derive the following

GENERAL RULE FOR ADDITION.

Write down the quantities to be added without altering their signs, placing those that are alike under each other; and unite such terms as are similar.

Otherwise.—*Write the quantities to be added one after another, putting the sign + between them, and then simplify the expression by incorporating like quantities.*

NOTE 1.—If any of the quantities be in brackets* and the sign + be before the brackets, the brackets may be removed without altering the result.

NOTE 2.—If the sign — be before the brackets, they cannot be removed without vitiating the result, until the signs of all the terms within the brackets be changed, viz. + into —, and conversely.

Ex. 23. To $3bc - 6d + 2b - 3y$, Add $-3bc + x - 3d + by$, And $2d + y + 3x + b$.

These may be arranged thus: $3bc - 6d + 2b - 3y$

$-3bc - 3d + x + by$

$2d + b + y + 3x$

And the sum will be $-7d + 3b - 2y + 4x + by$.

EXERCISES FOR PRACTICE.

1. Add $ab + 8$, to $cd - 3$, and $5\ ab - 4m + 2$.
2. Add $x + 3y - dx$, to $7 - x - 8 + hm$.
3. Add $abm - 3x + bm$, to $y - x + 7$, and $5x - 6y + 9$.
4. Add $3am + 6 - 7xy - 8$, to $10xy - 9 + 5am$.
5. Add $6ahy + 7d - 1 + mxy$, to $3ahy - 7d + 17 - mxy$.
6. Add $7ad - h + 8xy - ad$, to $5ad + h - 7xy$.
8. Add $2by - 3ax + 2a$, to $3bx - by + a$.
9. Add $ax + by - xy$, to $-by + 2xy + 5ax$.
10. Add $41cdf - 10xy - 18b$, to $7xy + 24b + 3cdf$.
11. Add $3bz - 17xy + 18a$, to $4ax - 5bx + 63cx$.
12. Add $8ab - 6bc + 4cd - 7xy$, to $17mn + 18fg - 2ax$.
13. Add $-42abc + 10abd$, to $50abc + 15abd + 5\ xyz$.
14. Add $ax - y + 6 - df + 44$, to $4df - 20 + 3ax + 75y$.
15. Add $45a - 10b + 4cdf$, to $82b - 4cdf + 10a - 4b$.
16. Add $12\ (a+b) + 3\ (a+b)$, to $2\ (a+b) - 10\ (a+b)$
17. Add $xy\ (a+b) + 3xy\ (a+b)$, to $2xy\ (a+b) - 4xy\ (a+b)$.
18. Add $ax + aa$, $x + xxx$, $4aa + 2x + ax$, and $2xxx$.
19. Add $y - yy + xy$, $2xx + 10yy$, to $4xy + 6y - 8xx$.
20. Add $aaa + 4aaa$, to $10aaa - 14aaa + 8aaa$.
21. Add $12yyyy - 10xx$, to $20xx - 8yyyy + 2xx + 3yyyy$.
22. Add $4(x - y) - 13$, to $(a+b) - 16\ (x-y) - 7\ (a+b)$.
23. Add $a(x+y) - 6y$, to $40\ (a-b) + 8a(x+y) - 36\ (a-b)$.
24. Add $10axy + 17bcd - axy$, to $6axy - 14bcd$.
25. Add $-x + y + 6x(a-b) - 7x$, to $16y - 15x(a-b) + 25x$.
26. Add $-4(x+y) + 16(x+y)$, to $15abc - 10\ (x+y.)$
27. Add $5abc - 6xy + mn$, $a + 6abc + 14xy - 11a + 6mn$, to $15xy - 17abc - 15a - abc + xy - 3mn + abc$.
28. Add $a(x+y) - 3b\ (x+y) - 4a(x+y) - 4\ (x+y) - (x+y)$ to $4b(x+y) + 7a(x+y) + 5(x+y) + 6b(x+y)$

ADDITIONAL EXERCISES.

Required the sums of the following quantities.

1. ax^2, a^2x, y^3, xy^2, and $3by^2$.
2. $a^3 - 2a^2b - 3ab^2 + 2b^3$, $3a^3 - a^2b - 4ab^2 + 10b^3$, $2a^3 - 3a^2b - 6ab^2 + b^3$, and $5a^3 - 4a^2b - ab^2 + 3b^3$.
3. $x^3 - 5x^2 - 3x + 1$, $2x^3 + 6x^2 + 5x + 3$, $3x^3 - 2x^2 - x - 1$, and $4x^3 - x^2 + 2x - 5$.
4. $-a+b+c+d$, $a-b+c+d$, $a+b-c+d$, and $a+b+c-d$.
5. $a - 2b$, $2b - 3c$, $3c - 4d$, $4d - 5e$, and $5e - 6f$.
6. $y^3 + 2y^2z - 3yz^2$, $2y^3 + 2y^2z + 5yz^2$, and $3y^3 - 4y^2z - 2yz^2$.
7. $ax^3 + bx^2$, $bx^3 - cx^2$, and $cx^3 + dx^2$.
8. $mz^2 - nz$, $nz^2 - pz$, and $2z^3 - z$.

* By brackets is meant the vinculum or parenthesis, already explained. This is one of the most important things in the study of Algebra; its use is unlimited. If quantities be included in any manner between brackets or parentheses, they must be treated as a single quantity, that is, the *result* of the operation of the *signs* within the brackets is to be used instead of the quantities themselves, as a general rule. If the signs of the quantities within the brackets be either *plus* or *minus*, or a combination of both; and if a factor be outside the bracket, each of the quantities within may be multiplied by that factor, preserving their signs, and the *product* will be the same as if the *result* were multiplied by that factor. Thus, $x\ (a+b-c) = ax + bx - cx$; or, if $a+b-c = e$; then $x\ (a+b-c) = ex$. Conversely, if the result of the quantities within the brackets be multiplied by any factor, the result will be the same as if each of the quantities were multiplied by that factor. Thus, if $a+b-c = e$; then, $ex = (a+b-c)\ x = ax + bx - ex$. If several factors be employed, the same results will take place. Thus, $axy + bxy - cxy = xy\ (a+b-c) = (a+b-c)\ xy$. And $mbcd - nbcd + pbcd = bcd\ (m-n+p) = (m-n+p)\ bcd$. Expressions of this kind may be varied indefinitely.

LESSONS IN MUSIC.—No. XVII,

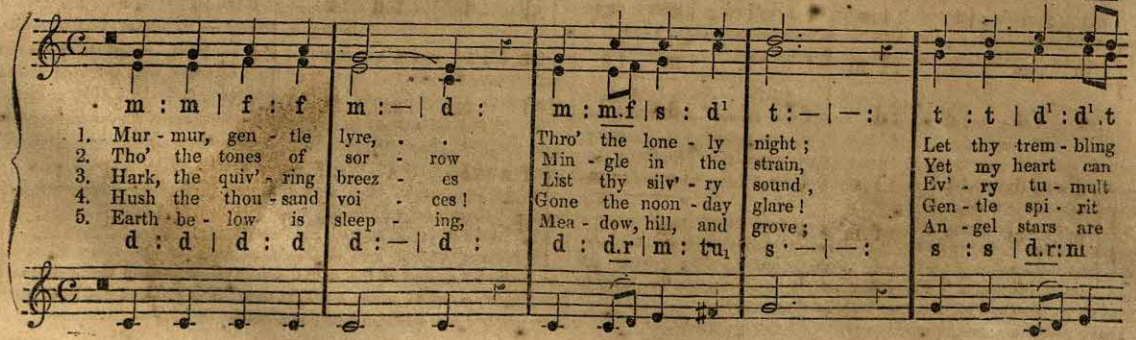
BY JOHN CURWEN.

(Continued from page 32.)

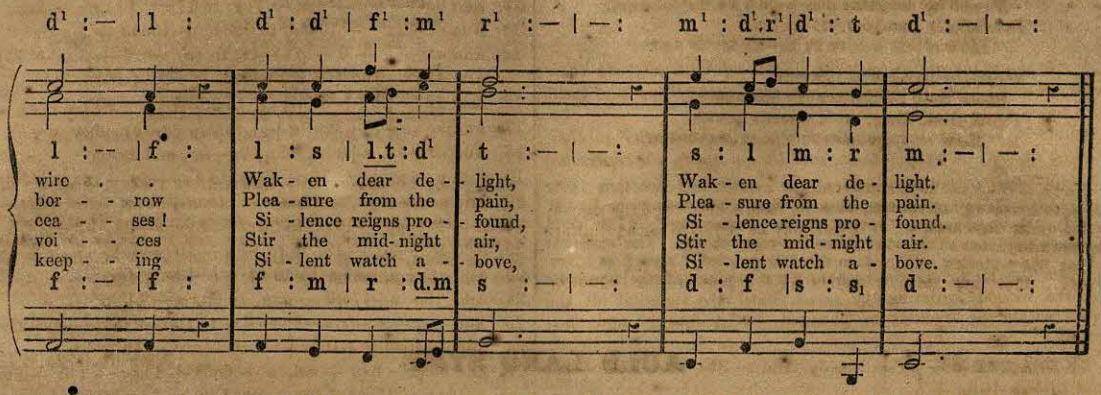
EXERCISE 36. **MURMUR, GENTLE LYRE,** KEY C. M. 0.

(Music by SILCHER. Adapted to English words by SOPER.)

s : s | l : l s :— | m : s : d^1 | d^1 : m^1 r^1 :— | — : r^1 : r^1 | m^1 : $m^1.r^1$



MURMUR, GENTLE LYRE *(Continued).*



NOTE.—This tune we insert, by the kind permission of Mr. F. L. Soper, from his "Melodies for Youth," published by J. A. Novello. It is arranged in "three parts" for what are called "equal voices," that is, for three male voices, or for three female or children's voices. More than one voice, however, may join in each "part."

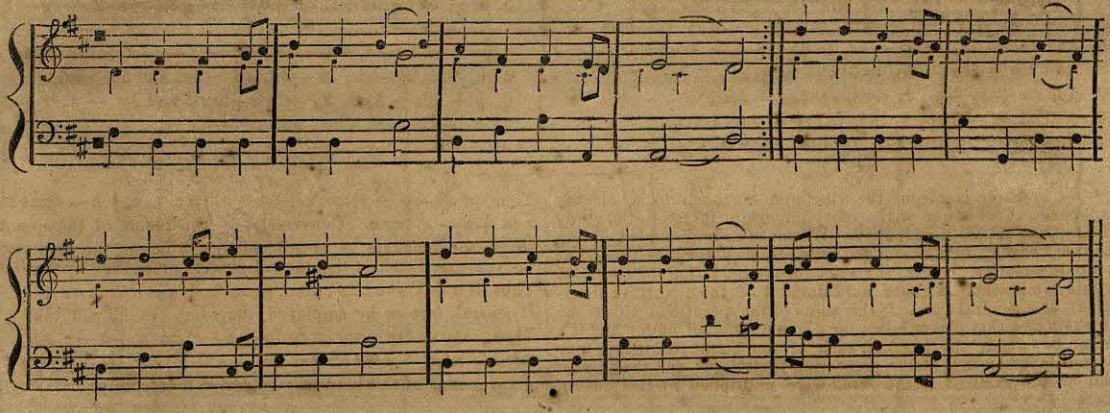
EXERCISE 37.

HONEST FELLOW, SORE BESET.

KEY D. M. 80

(Tune, Old English. Words from the last Edition of "Ballads for the Times," by M. F. TUPPER Esq.)

OLD NOTATION.



NEW NOTATION.

DA CAPO.

d :m | m :f .s	l :s | l :—	s :m | m :r .d	r :— | d :—
d :d | d :r .m	f :m | f :—	m :d | d :t_1 .d	d :t_1 | d :—
m :d | d :d	d :d | f :—	d :m | s :s_1	s_1 :— | d :—
d¹ :d¹ | t :l.s	l :l | s :m	d¹ :d¹ | t.d¹ :r¹	l :l | s :—
m :m | s :f.m	f :f | m :d	m :s | s :s	s :tu_1 | s :—
d :d | d :d	f :f_1 | d :d	d :m | s :t_1.d	r :r | s :—
d¹ :d | t :l.s	l :l | s :m	f.s :l | s :f.m	r :— | d :—
m :m | s :f.m	f :f | m :d	d :d | d :t_1.d	d :t_1 | d :—
d :d | d :d	f :f | d¹ :fi	l.s :f | m :r.d	s_1 :— | d :—

1. *Honest fellow, sore beset,*
Vexed by troubles quick and keen,
Thankfully consider yet
"How MUCH WORSE IT MIGHT HAVE BEEN."

Worthily thy faults deserve
More than all thine eyes have seen;
Think thou, then, with sterner nerve,
"How MUCH WORSE IT MIGHT HAVE BEEN."

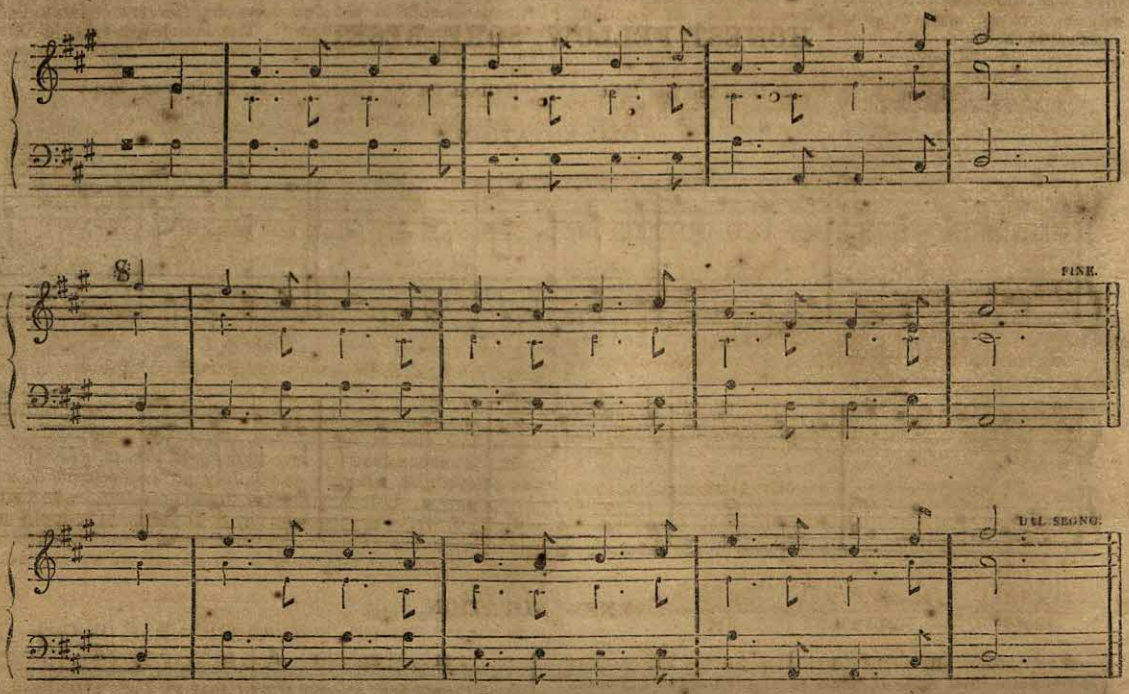
2. *Though the night be dark and long,*
Morning soon shall break serene;
And the burden of thy song,
"How MUCH WORSE IT MIGHT HAVE BEEN."

God, the Good One, calls to us,
On His Providence to lean,
SHOUT, THEN, OUT, devoutly thus,
"How MUCH WORSE IT MIGHT HAVE BEEN."

NOTE.—We have here separated the established notation from its accompanying interpreter, thus offering a better exercise for the pupil. *Da Capo* means "return to the beginning." [The dots between the lines of the staff mean the same thing. The students of the old notation will notice the "bass cleff," now first introduced. But they must be guided by the place of the key-note indicated by the square note, and neither cleffs nor keys will be a difficulty to them.] This piece is arranged for three voices—two trebles and a bass or baritone. As compared with the "air" and "second treble," the "bass" is written an octave too high in the new notation,—but this creates no confusion in practice, as the bass voice is *naturally* an octave lower than the treble.

EXERCISE 38. **AULD LANG SYNE.** KEY A. M. 112.

OLD NOTATION.



THE SAME IN THE NEW NOTATION, BUT FOR TWO EQUAL VOICES.

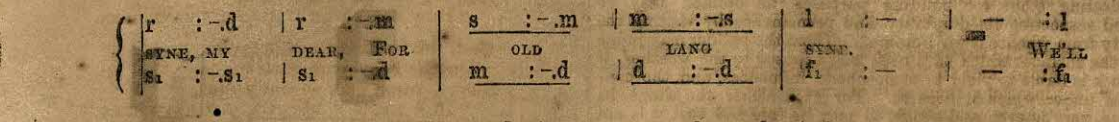
: s_1	d	: -.d	d	: m	r	: -.d	r	: -.m	d	: -.d	m	: -.s
Should	old	ac-quaint-ance			be	for -	got,	And	ne -	ver	brought	to
: s_1.f_1	m_1	: -.s_1	d	: d	s_1	: -.s_1	s_1	: -.s_1	m_1	: -.s_1	d	: -.d

l	: —	—	l	s	: -.m	m	: -.d	r	: -.d	r	: -.m
mind?			Should	old	ac -	quaint -	ance	be	for -	got,	And
f_1	: —	—	: f_1	m_1	: -.s_1	d	: -.d	s_1	: -.s_1	s_1	: -.s_1

d_1	: -.l_1	l_1	: -.s_1	d	: —	—	: l	s	: -.m	m	: -.d
days	of	"lang		syne?"*			"For	OLD		LANG	
l_1	: -.f_1	f_1	: -.s_1	d_1	: —	—	: d	d	: -.d	d	: -.d

* *Lang Syne*, long ago.

AULD LANG SYNE *(Continued).*



2. We two have run about the braes,†
And pulled the gowans‡ fine;
But we've wandered many a weary foot,
Since old "lang syne." For old, &c.

3. We two have paddled in the burn,§
From morning sun till dine:
But seas between us broad have roared,
Since old "lang syne." For old, &c.

4. And here s a hand my trusty friend,
And gi' us a hand of thine;
And we'll take the cup of kindness yet,‖
For old "lang syne." For old, &c.

NOTE.—To illustrate still further this subject of the different voices we give our present song,—first (in the old notation), as it may be sung by two female voices and one male voice,—and, again (in the new notation), as it should be sung by two female voices or by two male voices, without a third voice accompanying. The laws of harmony will tell you why the accompaniments in the two cases are different. [DAL SEGNO means "return to the sign." The curiously-marked S is put for that sign, and the word "fine" shows where you are to close.]

† *Braes*, hill sides. ‡ *Gowans*, daisies and other wild flowers. § *Burn*, brook.
‖ Let it be "the cup which cheers but not inebriates."

SOLUTIONS OF PROBLEMS AND QUERIES.

AT the request of several correspondents, we insert the solution of the following problem:—

"If 12 oxen eat up 3½ acres of pasture in 4 weeks, and 21 oxen eat up 10 acres of *like pasture* in 9 weeks; to find how many oxen will eat up 24 acres in 18 weeks."—*Newton's Universal Arithmetic, Prob.* XI.

In this question, our first inquiry is as follows: *If* 12 *oxen eat up* 3½ *acres of pasture in* 4 *weeks, how many acres will* 21 *oxen eat up in* 9 *weeks?*

By compound proportion (see Cassell's Arithmetic, p. 106), we have,

$$\left.\begin{array}{l} 12 \text{ oxen} : 21 \text{ oxen} \\ 4 \text{ weeks} : 9 \text{ weeks} \end{array}\right\} :: 3\tfrac{1}{2} \text{ acres} : 13\tfrac{1}{3} \text{ acres.}$$

$$\text{For, } \frac{21\times 9\times 3\frac{1}{2}}{12\times 4} = \frac{3\times 7\times 3\times 3\times 3\frac{1}{2}}{3\times 4\times 4} = \frac{7\times 3\times 10}{4\times 4} = 13\tfrac{1}{3}$$

But by the question, 21 oxen eat up only 10 acres in 9 weeks; whence it is plain, that these 10 acres are equivalent to 13⅓ acres of like pasture, and that the surplus 3⅓ acres is due to the growth of the pasture on the 10 acres in the additional 5 weeks; hence, our second inquiry will be as follows: *If* 10 *acres be increased by* 3⅓ *acres in* 5 *weeks, owing to the growth of the pasture in that time, how much will* 24 *acres be increased by in* 14 *weeks, (that is* 18 *weeks diminished by* 4 *weeks, these being necessary to make like pasture,) supposing the pasture to grow uniformly?*

Here, we have, by compound proportion, as before,

$$\left.\begin{array}{l} 10 \text{ acres} : 24 \text{ acres} \\ 5 \text{ weeks} : 14 \text{ weeks} \end{array}\right\} : 3\tfrac{1}{3} \text{ acres} : 21 \text{ acres.}$$

$$\text{For, } \frac{21\times 14\times 3\frac{1}{3}}{10\times 5} = \frac{3\times 8\times 3\frac{1}{3}\times 2\times 7}{2\times 5\times 5} = \frac{3\times 25\times 7}{5\times 5} = 21.$$

Whence it is evident that the 24 acres of pasture in the question, will be increased by 21 acres, that is, will become equivalent to 45 acres of *like pasture* in the additional 14 weeks' time. Hence, our third and last inquiry will be as follows: *If* 12 *oxen eat up* 3½ *acres of grass in* 4 *weeks, how many oxen will eat up* 45 *acres of like pasture in* 18 *weeks?*

Here we have, by compound proportion, as before,

$$\left.\begin{array}{l} 3\tfrac{1}{2} \text{ acres} : 45 \text{ acres} \\ 18 \text{ weeks} : 4 \text{ weeks} \end{array}\right\} :: 12 \text{ oxen} : 36 \text{ oxen.}$$

$$\text{For, } \frac{45\times 4\times 12}{3\frac{1}{2}\times 18} = \frac{9\times 5\times 2\times 6\times 4}{3\frac{1}{2}\times 3\times 6} = \frac{9\times 10\times 4}{10} = 36.$$

Thus, we find the answer to this curious question to be 36 oxen.

The same question was proposed in vol. I. p. 368, but there was a misprint in the fraction, which was 2½ instead of 3½ acres. It was solved by several correspondents, one of whom was a little girl, who it seems boldly pronounced the fraction to be an error. Solutions similar to the preceding were sent to us by T. L. D. (Thcapston); by S. H. J. R. (Paisley); and by H. ROBINSON (Sheerness), the latter of whom added the general solution in algebraic form as given by Sir ISAAC NEWTON.

CORRESPONDENCE.

CO-INSTRUCTION SOCIETIES.

SIR,—I am happy to inform you that we have recently got a "Young Man's Association for Mutual Instruction" set in operation here. Some of us had been for a long time desirous of establishing such a society, but we were prevented from making any exertions by the fear that it was impossible to form one where there were so few young men, and so little thirst for knowledge manifested. Having at last, however, resolved to make a spirited trial, we intimated as widely as possible that there would be a meeting on *such an evening*, at *such* a place, concerning the formation of a Mutual Instruction Society. What was our surprise when we found, at the close of the meeting, that *twenty* young men had enrolled themselves as members! The numerical attendance, and the ardour manifested by all in the proceedings, augur well of our young society's coming prosperity and permanence. I am convinced that every place, of any population, might soon be able to boast of a co-instruction society, if one or two of the citizens would only make an energetic attempt. I am, sir, &c.

W. W.

L'homme s'ennuie du bien, cherche le mieux, trouve le mal, et s'y soumet crainte de pire.—*Levis.*

L'homme passe sa vie à raisonner sur le passé, à se plaindre du présent, à trembler pour l'avenir.—*Ricaroi.*

LESSONS IN MECHANICS.—No. VIII.

STONEMASONS.

In selecting stone for building purposes, an opinion may be formed respecting its durability and permanence by visiting the locality from whence it was obtained. There the builder may judge from the surfaces which have been long exposed to the weather, if the rock is liable to yield to atmospheric influences, and the conditions under which it does so. For example, if the stone be granite, very uneven and rough, it may be inferred that it is not very durable; that the felspar, which forms one of its component parts, is more readily decomposed by the action of moisture and frost than the quartz, which is another ingredient; and, therefore, that it is very unsuitable for building purposes. If, moreover, it presents an iron-brown or rusty appearance, it may be set down as highly perishable, owing to the attraction which this metal has for oxygen causing the stone to increase in bulk, and so disintegrate. Stone when taken from the quarry sometimes becomes harder when exposed to the atmosphere; this arises from the fact that the water contained in it when forming part of the natural rock evaporates, and the stone, becoming dryer, becomes harder. Sometimes stone when taken from the quarry becomes friable, and falls to pieces when exposed to the outer air; this arises from the fact that it contains clay or alumina in such a state as to readily absorb moisture from the atmosphere, and from the agency of the moisture the particles lose their cohesion and fall apart. On account of this, sandstones, or freestones, as they are sometimes called, are ill adapted for the external portion of exposed buildings.

The work of the stonemason is more difficult than that of the bricklayer, that is to say, it requires more individual skill. It is usual for the stones to be hewn to about the size required before the workman begins his labour, but in almost all cases it is necessary that he should employ his tools as he goes on with his work, adapting each stone to its right position in the wall—keeping them all plumb. The best test of a good stonemason is when he builds without mortar or cement, simply piling the stones. There is many a wall which would not possess its perpendicularity for six feet, if it was not for the mortar or cement. This is intolerably bad workmanship. The stability of a building should never be allowed to depend on the strength of the adhesive compounds used in fixing the stones or bricks together.

PLASTERERS.

The plasterer contributes, in no small degree, to produce internal neatness and elegance. His work is comparatively modern, wainscoted walls and naked rafters being commonly found in houses not a century old. His materials are laths, or narrow strips of wood—usually fir—three or four feet in length, in thickness from one-eighth to three-eighths of an inch; lath nails, either wrought or cut; coarse stuff, formed of lime and hair; fine stuff, made of fine white lime and a small quantity of hair; gauge stuff, consisting of three-fourths putty and one-fourth plaster of Paris.

Among the causes which may be assigned for the premature decay of stucco and cement, externally used, may be mentioned the presence of muddy earth and decayed vegetable matters in the sand used with the lime and cement; to this may be added frequent impurities in the limes and cements themselves, particularly of argillaceous matter in the former; and, sometimes, to the too great proportion of lime or cement to sand. These things might escape notice, if the walls were well protected from moisture; the cement itself might do this on the side of the wall, but it fails to do so from above.

Let the sand of which a plaster composition is to be formed, whether with lime or cement, be washed until it no longer discolours clean water, and be well compounded with cementive matter, free from the impurities with which it is so frequently charged; let it be well laid on, and protected above by projecting eaves.

CARPENTERS AND JOINERS.

The readiest of all building material is wood—timber. To fell a tree and construct a hut is the most primitive form of operative architecture. The carpenter is therefore the first builder. By his labour erections of all kinds—houses, boats, bridges—may be rapidly and economically constructed. We call ours an age of iron, and so it is; but we have not yet learned—and never expect to learn—that the carpenter is required no more.

Now it is very important for the carpenter to understand the principles of his trade, how timbers of various lengths and various degrees of inclination may be joined together, and made to support and strengthen each other. It is essential to this end that he should have a thorough acquaintance with the mechanical principles of the different joints. Of course, it is impossible in a brief notice such as this to do more than allude to a few first principles. A mortice joint is a method of fitting one timber to another by means of insertion, the extremity of one timber being received into a perforation in another. The mortice is the opening or hole cut in one piece of wood to admit the projecting extremity of another piece; the tenon is the end of the timber which is reduced in dimensions so as to be fitted into the mortice. (Fig 1.)

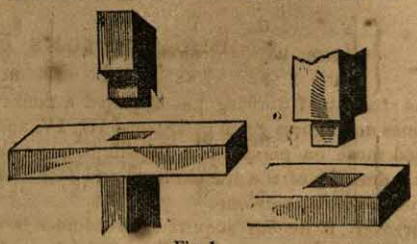


Fig. 1.

Scarfing is another method of insertion, in which the ends of pieces overlap each other, and are indented together, so as to resist longitudinal strain by extension. (Fig. 2.)

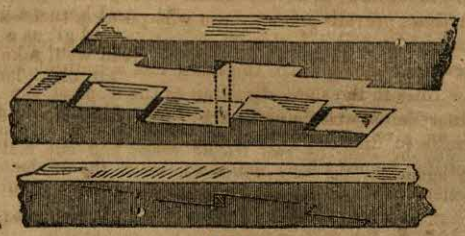


Fig. 2.

Tongueing and rabbeting is that method of insertion in which the edges of boards are wholly or partially received by channels in each other. Dovetailing is a method of insertion in which the parts are connected by wedge-shaped indentions, which permit of their separation in one direction only. (Fig. 3.)

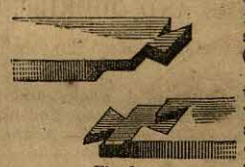


Fig. 3.

Now in all these modes of insertion there are certain fixed principles to which it is well that the operative should give heed. They should in all cases be viewed primarily as to the strain which they have to bear; and secondly, as to the neatness of finish.

We class carpenters and joiners together, but there is a broad line of distinction between them. A carpenter performs the rougher kind of work; the joiner the neater and more elaborate. A good carpenter is often—and almost naturally so—a bad joiner; but a good joiner is never a bad carpenter, except that he is a much slower workman.

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LESSONS IN DRAWING.—No. X.

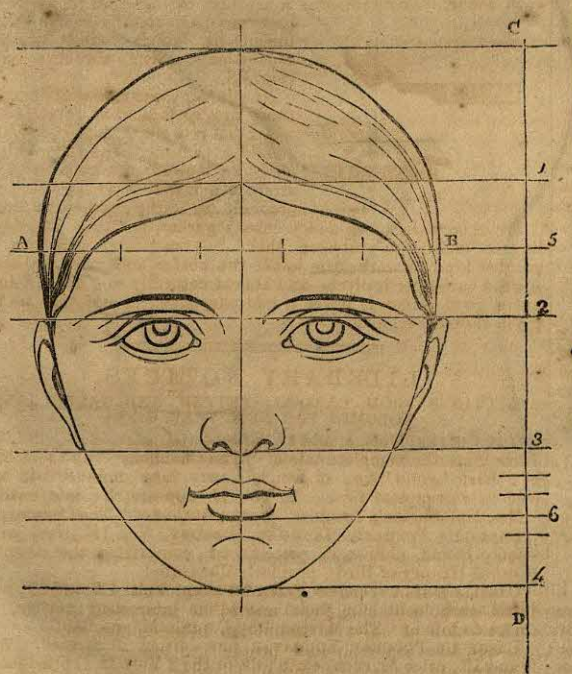
PROPORTIONS OF THE HUMAN HEAD AND FACE.

If the student of drawing has acquired a facility in drawing the lines and figures given in Lessons III. IV. and V., and has studied those on perspective, he will be somewhat prepared for the drawing of the human head and face—an early object of ambition with every one.

Moreover, if he has acquired a readiness in drawing and dividing straight lines, and in throwing circles and ellipses, unassisted by instruments, the following figures will afford him greater interest and information.

We must now, however, caution him against a practice which sometimes prevails among those who perform such exercises as these without the personal supervision of a teacher. It is generally observed that the hand has a natural tendency to draw lines in the same direction as the slope of the letters in ordinary hand-writing. This arises from its having had so much exercise in drawing lines of this slope, both in learning and in practising penmanship; therefore, when the student comes to practice drawing, he must be warned of this. If he finds that his hand possesses this tendency in drawing, he must endeavour to check it, and must choose exercises for this very purpose.

Fig. 89.



Proportions of the Face and Head.

In addition to this particular *set* of the hand, it is also observed that young students have a preference for drawing *profiles* looking towards the left, rather than to the right. We have known this to be so much indulged in, that while a student could draw very well if allowed to follow his favourite practice, his hand seemed nearly powerless when compelled to draw in the opposite direction. All such preferences and practices should be avoided. The hand should be trained to move and to draw in all directions with equal facility.

A knowledge of the *proportions* of the human face is a necessary preliminary to its perfect delineation; and this the student will acquire by proceeding on the following plan.

Draw a vertical line of the length of the whole face and head, for the perpendicular diameter. Divide this line into four equal parts, and draw, as in fig. 89, horizontal lines through the points of division. Take a line C D equal and parallel to the vertical line, and number its parts for the sake of convenient reference. At a point half way between the points numbered 1 and 2, draw a horizontal line in length equal to *three* out of the four parts of the vertical line. On this line A B as a diameter describe a semicircle for the outline of the head. This diameter gives the greatest breadth of the whole *head*, as seen in front. In ascertaining the proportions of the whole body, it is customary to speak of the head and face, taken together, as *the head*; but at present we shall make some distinction. The roots of the hair being at the point 1, from that point to the bottom of the chin is the *face*, which is in length equal to three out of the four parts of the vertical line. *The breadth of the head is therefore equal to the length of the face.* With this diameter of *three* parts for the *minor* axis, describe the half of an ellipse whose longest diameter, or *major* axis, shall be equal to *five* parts of the vertical —that is, the whole and one part more. The *oval* figure produced by these combined curves gives the general outline of the head and face as seen in front.

Draw horizontal lines through the points 1, 2, 3, and 4, and calling these lines No. 1, No. 2, No. 3, and No. 4, then

The line No. 1 cuts the vertical opposite the point where the roots of the hair begin.

The line No. 2 cuts the vertical opposite the point where the nose joins the forehead—that is, gives the origin of the nose.

The distance from No. 2 to No. 3 is the length of the nose, being one-fourth part of the length of head and face together. The length of the nose is taken as the *unit* in measuring the different parts of the human face, as the head is in measuring the different parts of the body; and we say *four noses or four parts*, indiscriminately.

The distance from No. 3 to No. 4 is the length from the nose to the bottom of the chin.

Divide the length from No. 3 to No. 4 into two equal parts, as at No. 6, and this point marks the lower edge of the under lip. Divide the length from No. 3 to No. 6 into three parts, making the uppermost rather the longest, and the lower two will mark out the width of the lips. The hollow, or depression, where the lower lip meets the chin, is about the width of a lip.

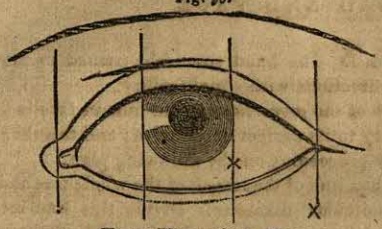
Divide the diameter of the head, or the length of the face, into five equal parts, each of these is three-fifths of a nose. The space between the eyes is of this width; the length of an eye is also three-fifths of a nose.

These divisions or fifths being measured on the diameter, and parallels to the vertical line drawn through them, give by intersections on the line No. 2 the length of the eyes, and the distance between them; the *upper eyelid* comes on the line No. 2. The *ear* is equal in length to the nose and is parallel to it, or between the lines No. 2 and No. 3. Two points on the line No. 3, at the same distance from the vertical line as are the inner corners of the eye, give the extent of the nostrils *alæ nasi* (or wings of the nose), which is equal to the length of an eye. Lastly, the *mouth* is to be taken somewhat wider than this extent.

In fig. 90 you see the front of the eye; divide the length into three equal parts, and one of them gives the diameter of the *iris* or coloured ring, perfectly circular, which surrounds the black spot in the centre, called the *pupil*. This is always

black, but the *iris* varies in colour in different individuals, and from this has received its name (*iris*, the rainbow). The vertical width of the fully opened eye is one-third of the length.

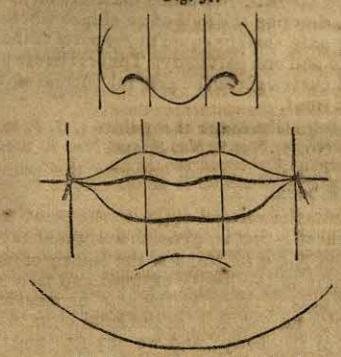
Fig. 90.



Front View of the Eye.

The corners of the eye are called respectively the inner *canthus* and the outer *canthus*, from the Greek *kanthos*, the corner of the eye. The lines of the outer canthus meet in an angle, but those of the inner canthus are enlarged and rounded, to receive the small piece of flesh, the caruncle, Lat. *caruncula*, situated in that corner of the eye. It is to be observed that a line joining the angle of the outer canthus and the *upper edge* of the rounded inner canthus will be a horizontal line. It follows that if we take for the axis of the eye the line passing through the outer corner and the *centre* of the inner, such line will be slightly oblique. This obliquity varies in different races of mankind, and is particularly remarkable in the Malayans, the Chinese, and some other Eastern nations. See the lesson on Geography in the preceding number.

Fig. 91.



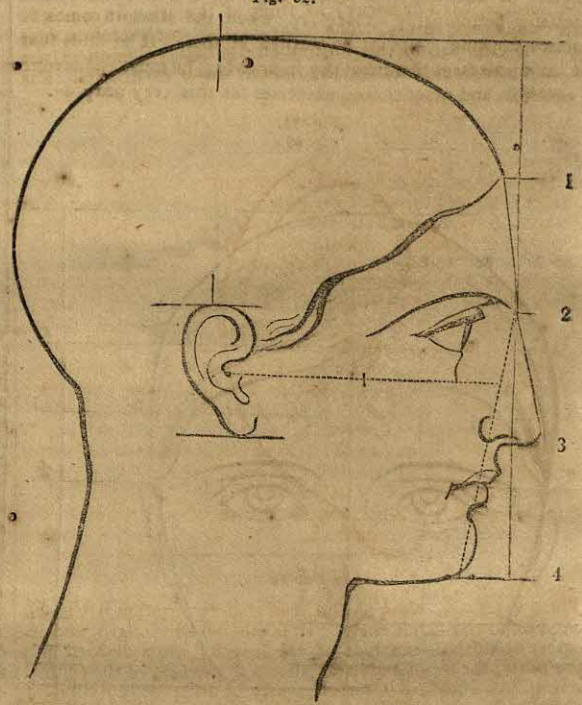
Outline of Nose, Mouth, &c.

Fig. 91 is an outline of the nose, mouth, and chin. The divisions of the nose have been already spoken of, and dividing the width of the mouth into three parts, the points of greatest fulness in the lips are indicated by parallels drawn to the vertical through these divisions.

The proportions of the different parts of the head and face, laid down in the preceding observations, are seldom if ever seen to obtain exactly in any individual. They are derived mainly from the examples of ancient Greek art, existing in the sculptures executed by the eminent artists of that acute people, to whom we owe alike the elements of geometry, the orders of architecture, and the standard of beautiful forms. These rules of proportion were the result of a comparison of the most beautiful and regular instances in nature, from which the *standard* or average of the highest order of beauty was ascertained. The Greeks indeed so perfectly accomplished this task, that their rules are acknowledged to be incapable of improvement, by all persons qualified to decide upon the question. Individual faces, for the most part, present only a collection of *deviations from the standard form*; but it is obvious that when the student becomes well acquainted with the standard, he will thereby be enabled to see in what individual peculiarities consist, and *how far these deviations extend*. A thorough knowledge of the standard form is therefore a sound foundation on which to establish a power of drawing the face in all its variations. Familiarity with this includes indeed much more; and the student must be completely familiar with the rules, before he can be fully able to prove their utility. At the same time, these rules are not to be applied with the rigidity of linear measurement. The semi-circle and semi-ellipse form the outline only as a *scheme* or *plan*. The student must not suppose that the geometrical outline is a satisfactory *drawing*. The oval thus formed indicates in a determinate manner the *limit* of the outline; but *flexibility* is one great characteristic of the entire human form. In their most tranquil aspect, the living features indicate mobility; they are ever ready to move; and curves rigidly correct would look like *wooden* dolls, as being deficient in this characteristic. With this caution, we proceed to complete the details of the proportions of the head and face, by giving the rules applicable to the *profile* or *side view*.

As in fig. 92, draw a vertical line and divide it into four equal parts as before directed, in order to obtain the length of the forehead, the nose, and the ear, and the distance from the nose to the bottom of the chin. Draw horizontal lines as before, and on No. 4 set off a point distant half a nose from the vertical. The line joining this point and the point where No. 2 cuts the vertical is called the *facial line*; it makes an angle of about 80° with the line No. 4 or base line; when drawn as directed, it serves to mark the origin of the nose, and the depression below the under lip.

Fig. 92.



Facial Angle.

Professor Camper, a German writer on Comparative Anatomy, drew much attention to this facial angle; he supposed that in it was to be found an obvious distinction between the races of mankind, and between man and brutes, the lower gradations of intellect having the smaller angle. However this may be, the facial line gives a fixed point in drawing the standard face; for taking a point in it halfway between lines 2 and 3, the *centre* of the ear lies in a horizontal line at a distance of rather more than two noses, or half a head.

The projection of the nose before the vertical is equal to the length from the nose to the upper lip, and the wing of the nose is of equal extent in the other direction.

The commencement of the upper lip lies about halfway between the vertical and the facial line. The distance, from the vertical, of the depression of the chin is determined by the facial line. The distance of the commencement of the throat

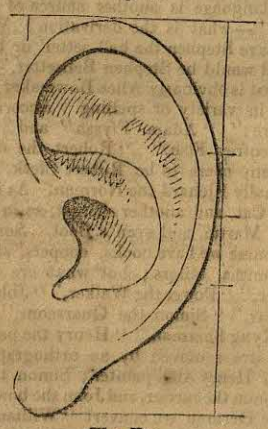
from the vertical may be taken as somewhat more than the length of the nose. Take a point halfway between the commencement of the throat, and the tip of the chin, join this point and the middle of the forehead, and the line thus drawn gives the place and direction of the eye-ball. The upper eyelid being opposite the origin of the nose.

Fig. 93.

Profile Eye.

The profile eye, fig. 93, is half the length of the full eye, and, this being a perspective view, the iris and pupil are seen as ellipses. There is a transparent chamber called the cornea (Lat. *corneus*, hard or horny) in front of the iris; in a profile view this is seen across. The black of the eye therefore does not come close up to the outline of the ball. Beginners are apt to make it so, but for the reason above mentioned it is incorrect.

Fig. 94.



The Ear.

The *ear*, fig. 94, is set on the head at an inclination not much greater than the facial angle. It is one nose in length, and its greatest breadth is one half of the length; when divided into three parts, the middle division shows the extent of the central opening. As a feature it varies greatly in different individuals; but, as we have said before, all variations are understood when referred to the standard form. The highest part of the head is immediately over the ear.

Having made himself acquainted with these proportions, the student should procure a plaster cast of the head of the Apollo Belvedere (see fig. 60, p. 259, vol. II.) or of the Venus de Medici, or of the Townley Venus, or of the Antinous, or of the Niobe, for all are of authority admitting of no question among artists, and any one of them will do; the careful study of this cast, aided by what we have explained in this lesson, will enable the student to lay the soundest foundation for future excellence in drawing the human head and face.

L'homme que l'on peut véritablement appeler homme se connaît aux marques qui suivent: Quelque accident qui lui arrive, il est inébranlable. Il est humble dans les grandeurs. Il ne lâche pas le pied dans les occasions où il s'agit de faire voir qu'il a du cœur. Il n'a d'autre but que sa gloire et sa réputation, et s'il n'est savant, il a au moins de l'amour pour les sciences.—*Maximes des Orientaux.*

LESSONS IN ENGLISH.—No. XLIV.

By John R. Beard, D.D.

NAMES OF PERSONS. (*Continued.*)

Professional names gave rise to a great multitude of family names. I can enumerate only a few: King, Prince, Duke, Lord, Pope, Bishop, Prior, Parsons, Priest, Monk, Stewart, Constable, Hunter, Falconer, Palmer (a pilgrim), Cook, Smith, Tailor. Originally, most of these names were descriptive, a kind of surname to distinguish individuals. Thus, in old documents, we read of "Colgrin my reeve," Bailiff (whence Bailey) or Steward; "Harding, the Smith;" "Lefstan, the Carpenter;" "Elstan, the Fisherman;" "Osmund, the Miller."

Signs are now very unusual in connexion with ordinary trades. The public-house keeper and the pawnbroker are almost the only business-men who retain signs. Even the barber's pole has all but vanished. In days of yore signs were very common, and, for the most part, they were symbolical, that is, they—on the ground of some resemblance—set forth the kind of business which each chapman conducted. Signs, as being distinctive, offered a means of denoting individuals. This fact is exemplified in the following lines, which were printed in 1612:—

First, there is maister Peter at the *Bell*,
A linnen-draper and a wealthy man;

I retain the antique spelling:—

Then maister Thomas that doth stockings sell;
And George, the grocer, at the *Frying-pan*;
And maister Timothie, the woollen draper;
And maister Salamon, the leather-scraper;
And maister Frankie, ye goldsmith at the *Rose*;
And maister Phillip with the fiery nose.

And maister Miles, the mercer, at the *Harrow*;
And maister Nicke, the silkman, at the *Plow*;
And maister Giles, the salter, at the *Sparrow*;
And maister Dicke, the vintner, at the *Cow*;
And Harry Haberdasher at the *Horne*;
And Oliver, the dyer, at the *Thorne*;
And Bernard, barber-surgeon, at the *Fiddle*;
And Moses, merchant-tailor, at the *Needle*.

When these verses were written, the correspondence between the sign and the thing signified must have generally vanished, for there is little congruity between a plow and a silkman, a cow and a vintner, or a fiddle and a barber-surgeon; though the needle would serve as well as "a goose" as an emblem for a merchant-tailor.

What are called Christian names were in England, at a very early period, the sole name borne by individuals. The Christian name is the name given at christening, that is, baptism. The name given at the solemnity was the name of some saint. The saint, whose name was thus taken, was thereby recognised as the patron saint of the individual. Here is the feeling that introduced into our language so many scriptural names. Very natural was it that, in a religious ceremony, a religious name should be given to the infant received by water into the fostering arms of the church. Accordingly, we have Anthony, Bartholomew, Boniface, Barnard, Cuthbert, Dunstan, Daniel, Godfrey, George, Gerard, Hilary, Leonard, Martin, &c.

The Christian name alone is found in times anterior to the Norman conquest. Thus in old legal documents we have, together with the sign of the cross (made originally as a sanction, and afterwards as a substitute, kings, princes, and nobles being then unable to write even their own name), e. g., + Ego Edredus confirmavi, + Ego Edmundus corroboravi, *I Edmund have thus confirmed* (my act).

These Christian names passed into family names. For instance, Edward gave rise to Mr. Edward; more commonly, Mr. Edwards, that is, Edwardson. The transformation is sometimes attended by the abridgment or the addition of a syllable, so as to give rise to diminutives, as Batty, a diminutive of Bateson. Thus, we say, *little* John, or Johnny. From *little John* comes the name Mr. Littlejohn. Ot and Kin, perhaps also Cock (or Cox), are syllables which have a diminutive force. Here follow instances of family names derived from Christian names:—

Adam	gave birth to	Adamson, Adams, Adye, Addison.
Abraham	„	Abrahms, Braham, Maub, Mabbe, Mabbot.
Arthur	„	Atty, Atkins, Atkinson, Atcock.
Bartholomew	„	Batty, Batts, Bates, Batson, Bartlett, Batcock.
Christopher	„	Kister, Kitts, Kitson.

Edmund	„	Edmundson, Edmunds, Munn.
Hugh	„	Hewson, Hugget, Huggins, Hugginson.
John	„	Johnes, Jones, Johnson, Janson, Jennings, Jenkinson, Jenkins, &c.
Peter	„	Peterson, Pierce, Pierson, Perkin, Perkinson, Parkins.
Timothy	„	Timms, Timmings, Timpson, Timpkins.

I annex a pedigree of a family which lived in Cheshire not long after the Conquest. It is interesting, because it affords examples of several of the methods in which person-names were formed before family names were fully established :—

WILLIAM BELWARD, Lord of Malpas, in Cheshire, had two sons.

1. Dan DAVID of Malpas, called on account of his scholarship le Clarke, the clerk, that is, scholar.

2. RICHARD.

1. WILLIAM, called DE MALPAS, from his estate.
2. PHILIP, called "Gogh," that is, red. His descendants took the name of EGERTON.
3. DAVID took the name of GOLBORNE, from his estate.

A SON, who took the name of GOODMAN, or, rather, received it of others, from the excellence of his character.

1. THOMAS, called DE COTGRAVE, from his estate.
2. WILLIAM, DE OVERTON, from his estate.
3. RICHARD, surnamed LITTLE, from his diminutive stature.

1. A SON, called KEN-CLARKE, that is, *knowing scholar*.
2. JOHN RICHARDSON, from his father's Christian name.

There lies before me an ancient Talliage Roll, a curious document, as exemplifying the origin and nature of local surnames. It is a list of the persons who in 1336 were in the town of Leicester* taxed one-tenth of their assessed substance. A few illustrative specimens may be here produced of surnames from

Affinity.	Place.	Profession.
Alicia, formerly the wife of John Norman	John of Shirford	Thomas the Rider
The wife of Reginald of Eccleshall	William of Kayham	Robert the Palmer
The son of Peter, the Wright	Roger of Claybrook	Janyn the Webster
John Hodinges, Junior	Henry of Willoughby	Matilda the Waterman
The son of William of Lincoln, Mercer	Matilda of Thornton	Roger the Forester
Adam, the son of Edith	Robert Coventre	William the Saddler
Matilda, formerly Andesmayden	Richard of Boseworth	Nicholas the Skinner
Thomas, the son of Thomas Wynger	Marion of Coventry	Michael the Baxster
	John of Beverley	Henry the Pedlar
	William of Stanton	William the Gardiner
	Adam of Oke	Alicia the Fysshere
	John atte Hall	Robert the Taverner
	Roger of Blaby	Simon the Barber
	John o' the Waynhouse	Richard the Glover
	John atte Walshalle	Adam the Latcher

Place and Profession.	Abbreviated.	Various and Curious.
Ralph of Frisley, Tailor	Isabel Melemaker	John the Cat
Roger of Knighton, Mercer	Nicholas Porke	Roger Pestell
John Joyce, Mercer	John Lambe	Matilda Mikellove
John of Thurmaston, Tailor	William Sharp	Walter Fish
John of Ayleston, Chaplin	John Tebold	Thomas Deth
Thomas of Beby, Mercer	John Sturdy	Richard the Large
William of Beby, Draper	William Goldsmith	Andrew Six-and-twenty
Robert of Beby, Draper	Henry Aldytch	Roger the Bee
Robert o' the Waynhous, Wheelwrighte	Matilda Moubray	William Rough
William of Stoke, Thakkere (thatcher)	Richard Kypping	Richard Lefthand
William Horn of Melton	Johanna Pontrell	Adam Pestle
John, the Haywood Clerk	Roger Glyde	Robert Pyk
William of Ashby, Farmer	Walter Miles	Henry Underwode
	William Ace	John Sturdy
	William Page	John Stole

The process of abbreviation is illustrated in the same names in different stages of formation. Thus we find Nicholas *the* frereman and William Frereman (the friar's man or servant). Hence it is easy to see how "Alicia the mercer and John her son" would be shortened into Alicia Mercer and Johnson. Roger Pestell (or Pestle) is clearly Roger Atte (at the sign of the) Pestle (and Mortar); Walter Miles is Walter the soldier. John o' the Waynhouse, is John of the weighbridge, abridged into John Weighbridge. The spelling is by no means correct, and in bad spelling both in spoken and written language is another source of proper names. "Stephen Bellzeter"—what is the derivation? Write Bellzeter correctly, and you have Stephen the bell-setter, or the bell-hanger, which when curtailed would be Stephen Bellsetter. So the "Hawis Boumaker" of the list is obviously Alice Bowmaker. Our ancestors indulged themselves in variety of spelling. Accordingly we have "Alicia the fysshere;" "Adam Ffyssh" and "William the Fisher;" also "Geofrey Fish." "Robert the clerk," that is Robert the clergyman, came to be Robert Clerk. So "Richard Norman" was originally Richard the Norman. As in the above list one man is called a Cat, and another a Stoat, so in the roll we have a Bird, a Leveret, a Martin, and even a Boot. Some of the trades are singular. Of course we have cooks, coopers, sawers (sawyers), saddlers, porters, smiths, tailors; but what are we to make of "Michael the Walker," "Power the Walker," "John the Bouwer," "Simon the Curreour," "Simon the Quarreour," "Geoffrey the Lorimer," "John Kyng Sherman," "Henry the peyntour." Some of these difficulties are removed by an orthographical resource. Thus do we obtain Henry the painter; Simon the quarrier (or quarryman); also Simon the currier, and John the bower (bowmaker). By referring to the German we convert "William the Walker" from a personage distinguished for celerity of foot into plain Wiliam the fuller, and "Geoffrey the Lorimer" is by the aid of the French made to assume his proper shape as Geoffrey the whitesmith.

Leicester in the fourteenth century wears a very material aspect. Its inhabitants seem to have been pretty much employed in providing for the body. Among them there was not a single artist or a single schoolmaster, in our sense of the term. There were two chaplains and two clerks, whose position cannot have been very enviable, unless it depended on something better than this world's goods; for the four parsons among them possessed not so much property as "Master John the Cook," with one exception the only personage of consequence enough to receive the worshipful title of master. The cooks appear indeed to have been in great request, for while there were in the town three drapers, four tailors, two taverners (tavern keepers), two barbers, and eight mercers, there were not fewer than seven public cooks. And in possessions the cooks could venture a comparison even with the gentry; among tradesmen they were clearly the most respectable, for while the average amount of property held by the mercers was eighteen shillings, and the average of the clergyman was twelve shillings, the cooks possessed on an average each thirty-three shillings.

"Nick names" may serve to throw light on the formation of names generally. Nick (from the German necken, *to banter*, to teaze) names are names given to persons in the way of amusement, derision, or contempt.

* Thompson's History of Leicester, p. 451.

The age of Charles II. was an age of nicknames—the king himself was known as "Old Rowley," in allusion to an ill-favoured but famous horse in the royal mews. Nor was the cognomen at all disagreeable to him. Mrs. Holford, a young lady much admired by the king, was in her apartments singing a satirical ballad upon "Old Rowley the king," when he knocked at her door. Upon her asking who was there, he, with his usual good humour, replied, "Old Rowley himself, madam." Hobbes he called "The Bear," "Here comes the Bear to be baited," was his remark, as soon as he saw the great philosopher surrounded by the wits, who rejoiced in his conversation. A favourite yacht received from him the name of "Tubbs," in honour of the Duchess of Portsmouth, who was plump and full in her person. The queen he called "a bat," in allusion to her short, broad figure, her swarthy complexion, and the projection of her upper lip from a protuberant foretooth.

LESSONS IN FRENCH.—No. LV.

By Professor Louis Fasquelle, LL.D.

§ 47.—Paradigms of the Auxiliary Verbs.

To familiarize the student with the frequent use made by the French of the indefinite pronoun *on* [§ 41, (4.)], we have introduced it in our conjugation of the verbs.

(1.) AVOIR, *TO HAVE*,—AFFIRMATIVELY.

Indicative Mode.

SIMPLE TENSES.		COMPOUND TENSES.	
PRESENT.		PAST INDEFINITE.	
J'ai,	*I have*	J'ai eu,	*I have had*
Tu as,	*thou hast*	Tu as eu,	*thou hast had*
Il a	*he has*	Il a eu,	*he has had*
On a	*one has, people have*	On a eu,	*one has had*
Nous avons,	*we have*	Nous avons eu,	*we have had*
Vous avez,	*you have*	Vous avez eu	*you have had*
Ils ont,	*they have*	Ils ont eu,	*they have had*
IMPERFECT.		PLUPERFECT.	
J'avais,	*I had, was having, or I used to have*	J'avais eu,	*I had had*
Tu avais,	*thou hadst*	Tu avais eu,	*thou hadst had*
Il avait,	*he had*	Il avait eu,	*he had had*
On avait,	*one had, people had*	On avait eu,	*one had had*
Nous avions,	*we had*	Nous avions eu,	*we had had*
Vous aviez,	*you had*	Vous aviez eu,	*you had had*
Ils avaient,	*they had*	Ils avaient eu,	*they had had*
PAST DEFINITE.		PAST ANTERIOR.	
J'eus,	*I had, or did have*	J'eus eu,	*I had had*
Tu eus,	*thou hadst, etc.*	Tu eus eu,	*thou hadst had*
Il eut,	*he had*	Il eut eu,	*he had had*
On eut,	*one had, etc.*	On eut eu,	*one had had*
Nous eûmes,	*we had*	Nous eûmes eu,	*we had had*
Vous eûtes,	*you had*	Vous eûtes eu	*you had had*
Ils eurent,	*they had*	Ils eurent eu,	*they had had*
FUTURE.		FUTURE ANTERIOR.	
J'aurai,	*I shall or will have*	J'aurai eu,	*I shall, will have had*
Tu auras,	*thou wilt have*	Tu auras eu,	*thou shalt have had*
Il aura,	*he will have*	Il aura eu,	*he will have had*
On aura,	*one will have*	On aura eu,	*one will have had*
Nous aurons,	*we shall have*	Nous aurons eu,	*we will have had*
Vous aurez,	*you will have*	Vous aurez eu,	*you will have had*
Ils auront,	*they will have*	Ils auront eu,	*they will have had*

Conditional Mode.

PRESENT.		PAST.	
J'aurais,	*I should have*	J'aurais eu,	*I should have had*
Tu aurais,	*thou couldst have*	Tu aurais eu,	*thou wouldst have had*
Il aurait,	*he would have*	Il aurait eu,	*he should have had*
On aurait,	*one would have*	On aurait eu,	*one should have had*
Nous aurions,	*we would have*	Nous aurions eu,	*we should have had*
Vous auriez,	*you would have*	Vous auriez eu,	*you should have had*
Ils auraient,	*they would have*	Ils auraient eu,	*they should have had*

Imperative Mode.

Aie,	*have thou*
Qu'il ait,	*let him have*
Qu'on ait,	*let one, people, them, have*
Ayons,	*let us have*
Ayez,	*have ye or you*
Qu'ils aient,	*let them have*

Subjunctive Mode.

SIMPLE TENSES.		COMPOUND TENSES.	
PRESENT.		PAST.	
Que j'aie,	*that I may*	Que j'aie eu,	*that I may*
Que tu aies,	*that thou mayest*	Que tu aies eu,	*that thou mayest*
Qu'il ait,	*that he may*	Qu'il ait eu,	*that he may*
Qu'on ait,	*that one may*	Qu'on ait eu,	*that one may*
Que nous ayons,	*that we may*	Que nous ayons eu,	*that we may*
Que vous ayez,	*that you may*	Que vous ayez eu,	*that you may*
Qu'ils aient,	*that they may*	Qu'ils aient eu,	*that they may*
IMPERFECT.		PLUPERFECT.	
Que j'eusse,	*that I might*	Que j'eusse eu,	*that I might*
Que tu eusses,	*that thou mightest*	Que tu eusses eu,	*that thou mightest*
Qu'il eût,	*that he might*	Qu'il eût eu,	*that he might*
Qu'on eût,	*that one might*	Qu'on eût eu,	*that one might*
Que nous eussions,	*that we might*	Que nous eussions eu,	*that we might*
Que vous eussiez,	*that you might*	Que vous eussiez eu,	*that you might*
Qu'ils eussent,	*that they might*	Qu'ils eussent eu,	*that they might*

have / *have had*

Infinitive Mode.

PRESENT.		PAST	
Avoir,	*to have*	Avoir eu,	*to have had*

Participle.

PRESENT.		COMPOUND.	
Ayant,	*having*	Ayant eu,	*having had*
PAST OR PASSIVE.			
Eu,	*had*		

(2.) AVOIR, *TO HAVE*: CONJUGATED NEGATIVELY.

Indicative Mode.

SIMPLE TENSES.		COMPOUND TENSES.	
PRESENT.		PAST INDEFINITE.	
Je n'ai pas,	*I have not*	Je n'ai pas eu,	*I have*
Tu n'as pas,	*thou hast not*	Tu n'as pas eu,	*thou hast*
Il n'a pas,	*he has not*	Il n'a pas eu,	*he has*
On n'a pas,	*one has not*	On n'a pas eu,	*one has*
Nous n'avons pas,	*we have not*	Nous n'avons pas eu,	*we have*
Vous n'avez pas,	*you have not*	Vous n'avez pas eu	*you have*
Ils n'ont pas,	*they have not*	Ils n'ont pas eu,	*they have*
IMPERFECT.		PLUPERFECT.	
Je n'avais pas,	*I had not*	Je n'avais pas eu,	*I had*
Tu n'avais pas,	*thou hadst not*	Tu n'avais pas eu,	*thou hadst*
Il n'avait pas,	*he had not*	Il n'avait pas eu,	*he had*
On n'avait pas	*one had not*	On n'avait pas eu,	*one had*
Nous n'avions pas,	*we had not*	Nous n'avions pas eu,	*we had*
Vous n'aviez pas,	*you had not*	Vous n'aviez pas eu,	*you had*
Ils n'avaient pas,	*they had not*	Ils n'avaient pas eu,	*they had*
PAST DEFINITE.		PAST ANTERIOR.	
Je n'eus pas,	*I had not*	Je n'eus pas eu,	*I had*
Tu n'eus pas,	*thou hadst not*	Tu n'eus pas eu,	*thou hadst*
Il n'eut pas,	*he had not*	Il n'eut pas eu,	*he had*
On n'eut pas,	*one had not*	On n'eut pas eu,	*one had*
Nous n'eûmes pas,	*we had not*	Nous n'eûmes pas eu,	*we had*
Vous n'eûtes pas,	*you had not*	Vous n'eûtes pas eu,	*you had*
Ils n'eurent pas,	*they had not*	Ils n'eurent pas eu,	*they had*
FUTURE.		FUTURE ANTERIOR.	
Je n'aurai pas,	*I shall not*	Je n'aurai pas eu,	*I shall*
Tu n'auras pas,	*thou wilt not*	Tu n'auras pas eu,	*thou shalt*
Il n'aura pas,	*he will not*	Il n'aura pas eu,	*he will*
On n'aura pas,	*one will not*	On n'aura pas eu,	*one will*
Nous n'aurons pas,	*we shall not*	Nous n'aurons pas eu,	*we will*
Vous n'aurez pas,	*you shall not*	Vous n'aurez pas eu,	*you will*
Ils n'auront pas	*they will not*	Ils n'auront pas eu,	*they will*

have / *not had* / *not had* / *not have had*

CONDITIONAL MODE.

SIMPLE TENSES. PRESENT.			COMPOUD TENSES. PAST.		
Je n'aurais pas,	*I should*	not have	Je n'aurais pas eu,	*I should*	not have had
Tu n'aurais pas,	*thou wouldst*		Tu n'aurais pas eu,	*thou shouldst*	
Il n'aurait pas,	*he would*		Il n'aurait pas eu,	*he would*	
On n'aurait pas,	*one would*		On n'aurait pas eu,	*one would*	
Nous n'aurions pas,	*we would*		Nous n'aurions pas eu,	*we would*	
Vous n'auriez pas,	*you would*		Vous n'auriez pas eu,	*you would*	
Ils n'auraient pas,	*they would*		Ils n'auraient pas eu,	*they would*	

IMPERATIVE MODE.

N'aie pas,	*have not thou*
Qu'il n'ait pas,	*let him not have*
Qu'on n'ait pas,	*let one not have*
N'ayons pas	*let us not have*
N'ayez pas,	*have not ye* or *you*
Qu'ils n'aient pas,	*let them not have*

SUBJUNCTIVE MODE.

SIMPLE TENSES. PRESENT.			COMPOUND TENSES. PAST.		
Que je n'aie pas,	*that I may*	not have	Que je n'aie pas eu,	*that I may*	not have had
Que tu n'aies pas,	*that thou mayest*		Que tu n'aies pas eu,	*that thou mayest*	
Qu'il n'ait pas,	*that he may*		Qu'il n'ait pas eu,	*that he may*	
Qu'on n'ait pas,	*that one may*		Qu'on n'ait pas eu,	*that one may*	
Que nous n'ayons pas,	*that we may*		Que nous n'ayons pas eu,	*that we may*	
Que vous n'ayez pas,	*that you may*		Que vous n'ayez pas eu,	*that you may*	
Qu'ils n'aient pas,	*that they may*		Qu'ils n'aient pas eu,	*that they may*	
IMPERFECT.			PLUPERFECT.		
Que je n'eusse pas,	*that I might*	not have	Que je n'eusse pas eu,	*that I might*	not have had
Que tu n'eusses pas,	*that thou mightest*		Que tu n'eusses pas eu,	*that thou mightest*	
Qu'il n'eût pas,	*that he might*		Qu'il n'eût pas eu,	*that he might*	
Qu'on n'eût pas,	*that one might*		Qu'on n'eût pas eu,	*that one might*	
Que nous n'eussions pas,	*that we might*		Que nous n'eussions pas eu,	*that we might*	
Que vous n'eussiez pas,	*that you might*		Que vous n'eussiez pas eu,	*that you might*	
Qu'ils n'eussent pas,	*that they might*		Qu'ils n'eussent pas eu,	*that they might*	

INFINITIVE MODE.

PRESENT.		PAST.	
Ne pas avoir,	*not to have*	N'avoir pas eu,	*not to have had*

PARTICIPLE.

PRESENT.		COMPOUND.	
N'ayant pas,	*not having*	N'ayant pas eu,	*not having had*

PAST OR PASSIVE.

Pas eu,	*Not had*

LESSONS IN GERMAN.—No. XLV.

SECTION XCVIII.

Reißen = to tear, to rend, also, to draw, &c.; hence, an sich reißen, to draw towards, or to one, to usurp, seize upon; as, der Sturm riß ganze Bäume aus der Erde; the storm rent whole trees from the earth. Er hat das Vermögen seines Bruders an sich gerissen; he has usurped the fortune of his brother.

Sich um Etwas reißen = to strive, contend for anything; as die Räuber rissen sich um die Beute; the robbers strove for the booty.

I. Einsprechen (literally, to speak in) = to inculcate by words, to influence by speaking. Einem Muth, Trost, &c., einsprechen; to speak courage, consolation, &c., to one, i. e. to encourage, to console, &c.; as, der tapfere General besuchte täglich die Schanzen, um den Soldaten Muth und Trost einzusprechen; the valiant general visited the redoubts daily, in order to encourage and console the soldiers.

II. Bei Jemanden einsprechen = to call on one, to give one a call; as, ich sprach auf einige Augenblicke bei dem Herrn Pfarrer ein; I called for a few moments on the pastor.

EXERCISE 101.

Abrufen, to call, call away, recall;
Anfangsgründe, first principles, rudiments, elements;
Behaglich, pleasing, agreeable, comfortable;
Besonders, particularly, especially;
Cigarre, *f.* cigar;
Einsprechen, (See I.);
Fortschritt, *m.* progress;
Gelassenheit, *f.* tranquillity;
Greis, *m.* old man;
Hausgeräth, *n.* household-furniture;
Herrschaft, *f.* dominion, mastery, domination;
Kugel, *f.* bullet, ball;
Landungsplatz, *m.* landing-place, place of descent;
Reißen, to tear, seize, (See above);
Unbehaglich, unpleasant, comfortless;
Wiege, *f.* cradle;
Wirthshaus, *n.* inn, public-house.

Wer ein Vorrecht hat, sucht auch andere an sich zu reißen.	He who has one privilege seeks (to seize to himself) to usurp others.
Wollen Sie über Havre reisen?	Will you go (travel) via Havre?
Ich habe nichts dagegen, wenn Sie es vorziehen.	I have nothing against it, if you prefer it.
Wir ziehen es vor zu Hause zu bleiben.	We prefer to stay at home.
Der Fleißige macht bessere Fortschritte, als der Faule.	The industrious (man) makes better progress than the idle.
Rußland, Oestreich und Preußen rissen sich um das unglückliche Polen.	Russia, Austria, and Prussia contended about (the) unhappy Poland.

1. Trotz der Mühe, welche sich der Lehrer gab, wollten die Kinder keine rechten Fortschritte machen. 2. Er machte bedeutende Fortschritte in der deutschen Sprache, nachdem er die ersten Anfangsgründe überwunden hatte. 3. Er entbehrt der nöthigsten Bücher. 4. Eine arme Familie entbehrt oft der nothwendigsten Hausgeräthe. 5. Die Gelassenheit zieht ihre Stärke aus dem Bewußtsein höherer Güter, als die sind, welche wir entbehren. 6. Der Capitän erzählte uns gestern, daß sich der junge Italiener eine Kugel durch den Kopf geschossen habe. 7. Er schoß dem Bären eine Kugel durch den Kopf. 8 Ich ziehe es vor, über Bremen oder Hamburg, anstatt über Havre zu reisen. 8. Ich ziehe das Reiten dem Gehen, und das Fahren dem Reiten vor. 10. Es ist mir in einer warmen Stube behaglicher, als in einer kalten. 11. Es ist ihm am behaglichsten, wenn er nach dem Essen seine Cigarre rauchen kann. 12. Knaben ist es am behaglichsten und auch am gesündesten, wenn sie nach dem Essen eine halbe Stunde spazieren gehen. 13. Ich hatte den ganzen Morgen über ein unbehagliches Gefühl. 14. Die Fürsten Deutschlands haben von Neuem die Herrschaft an sich gerissen. 15. Der Oheim wußte nach und nach das Vermögen seiner Neffen an sich zu reißen. 16. Es ist schon lange, daß ich ihn gesehen habe. 17. Ist es lange, daß er krank ist? 18. Ja, es sind schon mehr als drei Wochen. 19. Bleibe zu Hause, bis daß ich zu dir komme; ich werde dich zu einem Spaziergange abrufen. 20. Der Tod ruft nicht nur den Greis, sondern auch gar oft den Mann in seinen besten Jahren, den Jüngling, und das Kind in der Wiege ab. 21. Da ich wußte, daß mein Freund mit dem Dampfboote ankommen würde, so holte ich ihn an dem Landungsplatze ab. 22. Ich habe diesen Brief heute Morgen von der Post abgeholt. 23. Ich sprach auf meiner Reise in verschiedenen Wirthshäusern ein—aber ich kann keines derselben besonders loben. 24. Ich spreche gewöhnlich bei meinen Freunden ein, wenn ich in die Stadt gehe.

1. I made better progress in the German language after I had mastered the first rudiments. 2. The uncle seeks to usurp the fortune of his cousins. 3. Is it long since your brother was taken ill? 4. No, it is not more than a few days since. 5. Will you stop at home, till I call on you? 6. It is more pleasant to me to take a walk in the country than to sit at home. 7. When I go to town, I generally call on some of my friends. 8. He prefers studying to all other employments. 9. I prefer walking to riding, and riding to driving. 10. During the battle the general rode along the ranks to encourage his soldiers. 11. It is healthful to children, when they can take

a walk after school. 12. The robbers strove for the booty which they had taken from the citizens.

Section XCIX.

Einen Tag um den andern, literally, one day about the other, i. e. every other day. Ex.: Er geht einen Tag um den andern in die Stadt; he goes every other day into town. Einen Tag um den andern habe ich Unterricht in der deutschen Sprache; every other day I have instruction in the German language.

I. Vergleichen = to equal, to compare to or with; as, Hievin ist ihr Niemand zu vergleichen; in this there is no one to be compared to her. Mit Gott, dem Vollkommenen, können wir schwachen, gebrechlichen Menschen uns nicht vergleichen. We, weak and fragile creatures, cannot compare ourselves with God, the all perfect. Wem ist das Reich Gottes gleich, und wem soll ich es vergleichen? Luc. 13, 18. Unto what is the kingdom of God like, and whereunto shall I resemble it? Vergleichen Sie gefälligst diese Probeblätter mit dem Manuscripte; please to compare these proof-sheets with the manuscript. Vergleichen, sometimes signifies to accord, to come to an agreement; as, Beide Parteien haben sich schon verglichen; both parties have already compounded. Die Gläubiger haben sich mit dem Schuldner verglichen; the creditors have compounded with the debtor.

Exercise 102.

Aufschlagen, to rise;
Beträchtlich, considerably;
Confect, *n.* comfit, comfiture;
Durchkommen, to come through, "get through," survive;
Gasthaus, *n.* hotel, inn;
Gebieten, to command, bid;
Gläubiger, *m.* creditor;
Händel, *pl.* quarrel;
Held, *m.* hero, champion;
Heldin, *f.* heroine;
Hereinbringen, to bring in;
Leichtsinnig, light, lightminded;
Nachtisch, *m.* desert;
Schreien, to cry;
Schuldner, *m.* debtor;
Thurm, *m.* tower;
Verblühen, to fade, decay;
Vergleichen, (See I.);
Werkzeug, *n.* implement, tool;
Wiederholen, to repeat;
Wundern, to wonder, be surprised.

Der Kaufmann war nicht im Stande, sich auf mehr als fünf und zwanzig Procent mit seinen Schuldnern zu vergleichen.	The merchant was not able to settle with his debtors at more than twenty five per cent.
Es wundert mich, daß er dieses Jahr, ohne Schulden zu machen, durchgekommen ist.	It surprises me that he has come (got) through this year without making (any) debts.
Der Preis einer Waare pflegt nach Umständen auf- und abzuschlagen.	The price of wares is accustomed to rise and fall according to circumstances.
Einen Tag um den andern hatte ich bei meinem kranken Bruder zu wachen.	Every other day I had to watch with my sick brother.
Man muß sich wundern, daß so etwas noch im neunzehnten Jahrhundert geschehen kann.	One must be surprised that such a thing can happen in the nineteenth century.
Der Gesandte hielt eine lange Rede an die Versammlung.	The minister delivered (held) a long address to the assembly.

1. Die Gläubiger haben sich mit dem Schuldner auf fünfzig Procent verglichen. 2. Die beiden Kaufleute konnten sich wegen des Preises nicht vergleichen. 3. Ich habe Beides mit einander verglichen. 4. Er hat ihm das Haus auf fünf Jahre vermiethet. 5. Der junge Mann vermiethete sich als Knecht. 6. Man muß sich wundern, daß so etwas noch in unsern Zeiten geschehen kann. 7. Es wundert mich, daß er durchgekommen und nicht gestorben ist. 8. Cicero hielt eine Rede gegen Catilina. 9. Derselbe hielt auch ebenfalls Reden über die Freundschaft, über das Greisenalter und über verschiedene andere Gegenstände. 10. Cäsar hielt eine Rede an seine Soldaten. 11. Der Schüler wiederholte zu Hause noch einmal das, was er in der Schule gehört hatte, um sich dasselbe wieder in's Gedächtniß zu rufen. 12. Wir hörten ein wiederholtes Schreien. 13. Der Preis dieser Waare ist bedeutend aufgeschlagen. 14. Die Früchte sind durch den Krieg beträchtlich aufgeschlagen. 15. Die Klugheit gebietet zuweilen auch dem tapfern Manne, einen Feind, der Händel an ihm sucht zu meiden. 16. Der politische Flüchtlingmuß sein Vaterland meiden. 17. Die Gesellschaft eines verdorbenen Menschen soll man meiden. 18. Der Arzt besucht den Kranken einen Tag um den andern. 19. Einen Tag um den andern geht er auf die Jagd. 20. Er handelte noch als Mann so leichtsinnig, wie er als Jüngling gehandelt hätte. 21. Bei der Ankunft der ungarischen Heldin Jagella und anderer ungarischen Helden in New-York wurde, als sie in dem Gasthause, wo sie eingekehrt waren, bei dem Nachtische saßen, ein ausgezeichnet schöner Thurm mit kriegerischen Werkzeugen, aus Confect gemacht, hereingebracht, worauf in deutscher Sprache die Worte standen: „Es leben die ungarischen Helden und Heldinnen!"

1. The creditor has compounded with his debtor at twenty per cent. 2. I could not compound with my creditors respecting the price. 3. Please to compare one with another. 4. I have let my house for five years. 5. A diligent scholar repeats what he has heard at school. 6. In war time the price of provisions rises considerably. 7. It surprises me that he does not avoid the society of such people. 8 We should avoid the society of those who are unjust in their principles. 9. I visit my sister every other day. 10. He acts just as he did in his youth. 11. All the goods have been taken from the merchant, as he could not compound with his creditors. 12. Youth, arm thyself, day by day, with more wisdom, as the flower of youth decays.

Section C.

Examples illustrating the various uses of the conjunctions.

Aber, allein, sondern.

Es ist bald gesprochen, aber schwer gethan. (Schiller.)	It is soon said, but done with difficulty.
Noch ist er nicht da, aber kommen wird er gewiß.	He is not yet there, but he will certainly come.
Die Zeichen werden gegeben, daß das Fest geendet sei; allein weder Wagen, noch Masken, noch Zuschauer weichen aus der Stelle. (Göthe.)	The signs are given that the festival is over; but neither the carriages, nor masks, nor spectators leave their places.
Nicht die Sprache an und für sich ist richtig, tüchtig und zierlich, sondern der Geist ist es, der sich darin verkörpert. (Göthe.)	Not only is the language itself correct, powerful, and elegant; but the spirit which is embodied throughout.

Als.

Louise ist mein Liebling, denn sie hat ein edleres Gemüth und einen festeren Charakter, als viele junge Damen; nichts als Sanftmuth spricht aus ihren Augen.	Louisa is my favourite, for she has a mind more noble, and a character more firm than many young ladies: nothing but gentleness speaks from her eyes.

Also.

Euch also soll ich trauen, Ihr nicht mir? (Schiller.)	To you then shall I trust: not you to me?
Er hat es selbst gethan und kann also niemand tadeln.	He has done it himself, and, consequently, can blame no one.

Auch.

Sie sind davon heute Nacht, die Jäger auch. (Schiller.)	They are off to-night, and the rangers also.
So gut er auch ist, so kann ich mich doch nie mit ihm befreunden.	How good soever (Sect 63.) he may be, I shall never become intimate with him.

Außerdem.

Alle diese Fürsten wuchsen in keiner höhern Erwartung auf, als über eine Republik zu gebieten, und keines ihrer Länder konnte ihnen eine andere Erfahrung geben; außerdem besaßen diese Fürsten nichts, als was die Niederlande ihnen gaben. (Schiller.)	All these princes grew up with no higher expectation than that of governing a republic, and none of their states could afford them any other experience; besides, these princes possessed nothing, but what the Netherlands gave them.

LESSONS IN GEOLOGY.—No. XXX.

By Thomas W. Jenkyn, D.D., F.R.G.S., F.G.S., &c.

CHAPTER II.

ON THE ACTION OF WATER ON THE EARTH'S CRUST.

SECTION XIV.

ON THE PRODUCTION OF RIPPLE MARKS.

Quarrymen who are employed in the blasting of stratified rocks, frequently find that when they have dislodged a mass of limestone, or a slab of sandstone, from the bed that lay beneath it, the upper surface of the fresh rock which they have just laid bare is uneven. It is furrowed and ridged like a moist strand on the sea-shore, and the ridges appear as distinct and fresh as if they had been left by the tide six hours before.

In the wealds of Kent and Sussex, slabs with these ripple marks, digged from the grits of Tilgate Forest, are turned to useful economical purposes. On account of the roughness of their surface, this kind of stone is employed in paving stable-yards, where an uneven floor is required to prevent the feet of animals from slipping when they pass over it.

The furrowed surface of the sandstones, or shales, has not only a resemblance to the sea-shore ripples, which are occasioned by the receding waves, but it is the very thing itself. You can trace to a considerable distance every bend and curvature in the undulations of the surface, with every cross hollow and counter ridge of the corresponding phenomena. Upon such a spot, an intelligent quarryman would be struck with the conviction that, as the waving surface exposed itself to view, he was standing on the sand of some ancient Delta, or on the argillaceous or clayey strand of some ancient sea—a strand now turned into hard sandstone or slate.

Fig. 67.

Ripple Marks on a Slab of new Red Sandstone, Cheshire.

If you have ever taken a walk, on the dried banks of a tidal river, where there is a curve in the bed of the stream, or if you have sauntered on the sands of the sea-shore, when the tide is out, you must have observed that when the water of the sea has been greatly agitated, either by heavy gales, or by strong currents, the forsaken surface of the sand or mud is undulated and ridged by the rippling of the waves. The direction and the height of these ridges are always according to the strength and the course of the winds and currents. This is precisely the case with very extensive surfaces of rocks which have been laid bare in the quarries of Cheshire, see fig. 67, Dumfrieshire, and in those of North America. In some instances the ridges rise very high, and the furrows sink very deep, shewing that the waters which last washed them were much agitated, and that the ripple at that spot had been very strong. In other cases, the undulations are gentle, and intersected by small cross ripples, proving the quietness of the waters, and a change in the direction of the waves.

When a large extent of alluvial matter, or of overlying beds, have been removed by the quarrymen, the upper surface of the rock, in these sandstone quarries, appears to be covered by a longitudinal ridge of sand, rising very gently, and disposed in a half-moon shape, or cresent-like manner. These have been occasioned by the curves or the meanderings of the small rills which flowed back to the tidal river at low water, or to the sea when the tide had ebbed. If you ever roamed along a sandy shore and by the edge of the sea at low water, you have found your course frequently interrupted by these kinds of rills in the sand.

One of the most striking illustrations of these phenomena was found about twenty years ago, in a new red sandstone quarry in Corncockle Muir in Dumfrieshire, south of Scotland. The beds of this sandstone rock, in that neighbourhood, recline on one another like bricks in one side of an arch. The quarrymen had long worked this rock, down to the depth of forty feet from the top. As they continued to dislodge one series of slabs after another, they found that every lamina or layer exhibited similar markings, some having even traces of drops from a shower of rain upon their surface. They found also that the lower surface of an upper slab dislodged, corresponded with the upper surface of the new rock that was made bare.

These facts are of great importance to the geologist, for they show that the process of rippling and of rain-marking was repeated. The process was this. The tide left the sand rippled and moist: a shower of rain pitted the soft mud; a wind filled the rain-marks with dry sand; and thus the impression was preserved until the quarrymen exposed it to view. In a few hours, the next tide came and covered the strand, and deposited a new layer of sediment, which, in its turn, formed a new surface for fresh ripple marks or rain prints. When these impressions had been once produced, the only condition essential to their preservation is, that they should have become covered with some fresh deposit of earthy matter before they were obliterated by any succeeding agitations of the waves.

When these ripple marks are covered by thick layers or slabs, their thickness is an index to the very quiet condition of the sea, and to the gentle action of the waters which brought the materials that covered them over without disturbing their form. The succession also of these marks on the surface of thick layers in the entire series, prove that, in the age of their deposition, there was an alternation of intervals of repose with periods of violence—of violence in the destruction and denudation of earlier rocks, and of comparative repose in the formation of the fresh sandstones.

In the structure of these rippled surfaces, it is curious to find that the deepest furrows between the ridges have generally a slight coating of bluish clay, charged with very minute portions of lignite and other vegetable matter. This is probably owing to a heavy shower, which occasioned a flooding in the rills or streamlets that traversed the shore. This overflow of water, by spreading over the rippled sand, covered the ridges with a thin lamina of clay, and deposited a thicker layer of it in the furrows, because more mud would settle at the bottom than on the sides of such curves.

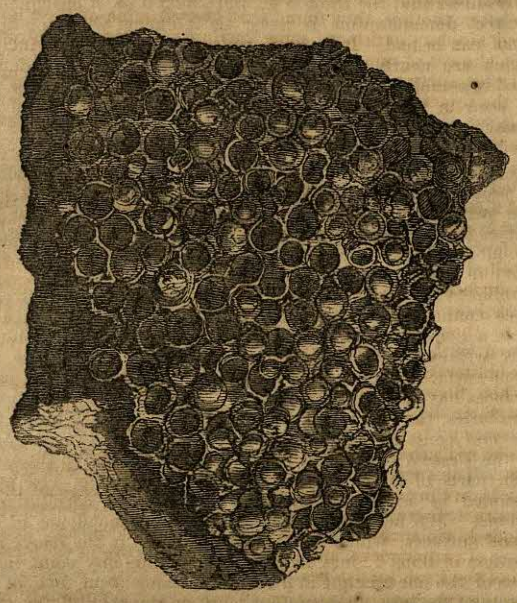
Sometimes the quarrymen discover that the surface of a newly exposed rock is marked not by ripple marks only, but also by angular ridges which cross each other in all directions, exactly like the edges of cracks at the bottom of a pool that a hot summer has made quite dry. This has been precisely the case with the surface of these ancient beds, for these angular ridges are the results of shrinkage in the strand. These tell us that, at this spot, the muddy strand dried up after a high tide—that, before the next high tide, it dried up and cracked, through the great heat of the season—and that, while these cracks were still open, the wind drove sands into them, which then became hardened in the rock. Being thus hardened, they formed these angular ridges.

Though, generally speaking, these ripple marks designate a sandy beach near the edge of the sea, this is not invariably

the case. It has been lately discovered that the rippling power of the sea is not limited to that part of the shore which lies between high-water mark and the edge of the sea at low water. Ridges and furrows are produced in sands which are constantly covered by the water of the sea, but at not very great depths. It was intimated in your last lesson, that the agitation of the sea caused by winds on the surface extends, even during storms, but to a very slight depth. Rippled sands, however, are constantly formed under water from six to ten feet deep; and, in some instances, they have been found even at the depth of sixty and seventy feet. It has been lately ascertained that currents, or large bodies of water in motion, may disturb mud and sand to the depth of more than four hundred feet.

It is not in sandstones of the new red formation only that these ripple marks are exhibited. They are found in sedimentary rocks of almost all geological epochs and in strata of various lithological character, such as grits, clays, shales, and limestone. They are seen on the slabs of calcareous grit in the wealds of Kent and Sussex, in the new red sandstone of Cheshire and Scotland, in the forest marble beds north of Bath, and in the shales of the coal measures at Cape Breton, Nova Scotia.

Fig. 68.



Representing the Impressions of Rain Drops on Sandstones and Shales.

The phenomena of these ripple marks reveal to us facts and principles of deep and awakening interest. They are clear illustrations of the perfect similarity of nature's agencies and processes myriads of ages ago, to those which are known in the present day. They tell us of subterranean powers which first upheaved these rippled shores to an enormous elevation above the reach of the waves, and which again, at an immense interval of time, became diminished in force, and caused these very rocks to subside again and become the bottom of the ocean. What a wonderful chapter in the history of our earth is every such rippled surface in a series of rocks! What a tale it tells of repeated elevations and depressions of the land on a vast scale! The examination of these processes and agencies tend to ennoble the intellect and enlarge its resources, while they lead us to admire the grandeur of their Author, who is one in counsel, and who, in geological agencies as well as in the laws of his providence, is "the same yesterday, to-day, and for ever."

The charm of this theme tempts me to take up a subject to which I made a passing reference at the commencement of this lesson. In speaking of ripple marks on the surface of rocks, I mentioned that some of them have impressions like the traces of a shower of rain falling upon soft mud.

About twenty years ago, some slabs of new red sandstone from Cheshire, which had their surfaces dotted with indentations, and ruffled by inequalities rising in relief, were submitted to the inspection of Dr. Buckland. That sagacious geologist at once conjectured that such holes and inequalities had been produced by the pelting of a shower of rain on the surface of a soft argillaceous or clayey sand. What was then a ridiculed conjecture is now a fact of induction; for similar impressions of rain drops may be seen formed at the present day on a deposit of red soil at the mouth of the river Patapscot near Baltimore, in North America, and also on the shore of the Bay of Fundy, Nova Scotia. See fig. 68.

These impressions or holes in the sandstone or strata are sometimes perfect hemispheres. In other cases the rain marks are of an oval shape, and appear elongated in a given direction, as if the drops had struck the moist surface of the sand or clay obliquely, as if to give us an idea of the direction in which the wind blew during the shower. Very frequently tracks of small annelids, and footprints of birds and quadrupeds, and ripple marks, accompany these rain impressions.

All these impressions on the surface of rocks, whether they be ripple marks of the sea, rain prints of showers, or traces of worms, birds, or saurians, are of thrilling interest to a geological student. They clearly prove the existence and the influence of a tide upon a sandy beach—a tide subject to the same laws of ebb and flow which operated then, and which continue to operate to this day. The ripple-marked grits of the weald in Sussex and Kent, of the forest marble near Bath, of the red sandstones of Shropshire, Scotland, and North America, and of the shales of the coal measures at Cape Breton, Nova Scotia, deliver the same lecture. Their ridges exhibit to us the phenomena of the flux and the reflux of the tide, in the advancing and retiring wave. The intersections or cross markings of these ridges show the direction in which the winds of ancient epochs acted upon the waves. In the deep furrow between these ridges we learn how the ocean billow was agitated by a heavy gale or storm; and in the gentle swell and undulation, we seem to see the sweep of an unruffled wave bathing the sand in the clear sunshine of a great calm.

After the tide has ebbed away, and perhaps never again to return to wash the sands of this solitude, the pattering shower "takes up the wondrous tale" to illustrate ocean's last homily on the early laws of nature. These pittings in the sandstones and shales, these round and oval prints of the pelting shower, falling perpendicularly on a calm day, or driven by a strong wind in a given direction, tell us that the atmosphere of our globe, in some of the remotest ages known to geology, corresponded in density with that which we breathe to-day. In those early ages, as now, the atmosphere had its winds and tempests; it had also its different currents of air, currents which varied in temperature, so as by their mixture to give rise to the condensation of aqueous vapour into drops called rain.

In concluding this lesson, you will allow me for once to moralise upon ripple marks and rain prints, which have been "written in the rock for ever." Think what millions of men, what hundreds of tribes and nations, have striven hard to transmit some trace of their existence to future generations and have failed. While their works have sunk into utter oblivion, the simple traces of a wave of "unstable water" that rippled some thousands or myriads of ages ago, remain as well defined and as fresh as if they had been impressed by the retiring wave of the morning's ebb tide. It is still more wonderful that even the patterings and the pittings of a falling shower, at that distant epoch, should have left marks equally distinct, and should also have registered, with infallible certainty, the direction in which the wind of that day blew.

This thought is beautifully worked out in a profound and magnificent essay of Dr. Hitchcock, on "The telegraphic system of the universe," forming the twelfth chapter of his "Religion of Geology." "Here we have" he says "the ripple marks, which present us with a faithful register of the slightest movement of the waters, and also of the motions of the atmosphere or of the currents in it that agitated the waters. In the almost impal-

pable powder that sometimes constitutes the rocks, we can trace the slightest erosion and comminution of the strata from which the deposit was worn. In the petrified rain drops we find an indelible trace of the most gentle shower, and here, too, we can see the direction of the wind. Such facts also imply the operation of electricity and gravity, of heat and cold, collecting and condensing the rain, and bringing it down; and so similar to present meteorological phenomena as these ancient showers appear to have been, that we may conclude the electrical reactions, in all respects, were the same as at present."

LESSONS IN GEOMETRY.—No. XVIII.

LECTURES ON EUCLID.

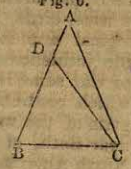
PROPOSITION VI.—THEOREM.

If two angles of a triangle be equal to one another, the sides which subtend (or are opposite to) the equal angles, are also equal to one another.

Let A B C, fig. 6, be a triangle, having the angle A B C equal to the angle A C B; then, the side A B is also equal to the side A C.

For, if the side A B be not equal to the side A C, one of them is greater than the other. Let the side A B be the greater of the two; and, from the side B A, measuring from the point B, cut off the part B D equal to the less side A C (by the 3rd. Prop. of this book). Then join the points C and D.

Fig. 6.



Now, because in the two triangles D B C and A B C, the side D B is equal to the side A C, by construction, and the side B C is common to both, therefore the two sides D B and B C of the one, are equal to the two sides A C and C B of the other, each to each; and the angle D B C is equal to the angle A C B, by hypothesis; therefore, the base, or third side D C is equal to the base or third side A B; and the triangle D B C is equal to the triangle A C B (by the 4th. Prop. of this book); that is, the less is equal to the greater, which is absurd. Therefore the side A B is not greater than the side A C; in the same manner it may be shown, that the side A B is not less than the side A C. Wherefore, the side A B is equal to the side A C. Therefore, if two angles, &c. Q. E. D.

Scholium.—We have here given Euclid's demonstration of the preceding proposition, somewhat improved. We say *somewhat improved*, as we have observed that students who have carefully read and studied this proposition, have not appeared fully satisfied in their own minds that all was right, although they could not detect the omission, or tell exactly where they thought it was faulty. The method of proof here employed is called *indirect*, because it does not show at once that a thing must be exactly as it is, but it shews that a thing could not be *otherwise* than it is, by the absurdity which would arise by supposing the contrary. Now, the apparent defect lies in this, that, for the sake of this argument, it is supposed that A B is the greater of the two, while equally for the sake of argument, it is not supposed that A B is the less of the two. Whereas, it is evident that we can only be driven to the conclusion that A B is equal to A C, between the proof of the absurdity of both suppositions. It may be argued, however, that the supposition of A B being less than A C, would be met by supposing that A C was the greater of the two, and that the argument or proof would be the *same* were this hypothesis assumed, and would be equally *conclusive*. But this is too refined an argument for ordinary minds, and cannot be supposed at first to present itself to the mind of a learner. It is on this account that we have made the small addition to the preceding demonstration, to which we refer.

Dr. Thomson, in his edition of the Elements, has made some useful observations in his notes on this proposition; but notwithstanding their utility, and his wonderful acuteness, we think he has not met exactly the difficulty of the case. The following observations on this proposition, taken from the Gower-street edition, will be found of some use; we quote them, however, in order to correct the notion which they convey in the fourth paragraph, by Dr. Thomson's remarks on the same proposition

"In the construction for this proposition it is necessary that the part of the greater side which is cut off equal to the less, should be measured upon the greater side B A from vertex (B) of the equal angle, for otherwise the fourth proposition could not be applied to prove the equality of the part with the whole.

"It may be observed generally, that when a part of one line is cut off equal to another, it should be distinctly specified from which extremity the part is to be cut.

"This proposition is whatis called by logicians the *converse* of the fifth. It cannot however be inferred from it by the logical operation called *conversion*; because, by the established principles of the Aristotelian logic, *an universal affirmative admits no simple converse*. This observation applies generally to those propositions in the Elements which are converses of preceding ones.

"The demonstration of the sixth is the first instance of indirect proof which occurs in the Elements. The force of this species of demonstration consists in showing that a principle is true, because some manifest absurdity would follow from supposing it to be false.

"This kind of proof is considered inferior to *direct* demonstration, because it only proves that a thing *must* be so, but fails in showing *why* it must be so; whereas *direct* proof not only shows that the thing *is* so, but *why* it is so. Consequently, indirect demonstration is never used, except where no direct proof can be had. It is used generally in proving principles which are nearly self-evident, and in the Elements is oftenest used in establishing the *converse* propositions. Examples will be seen in the 14th, 19th, 25th, and 40th propositions of this book."

"It is often stated," says Dr. Thomson, "that this proposition affords the first instance in which the indirect method of proof is employed. This, however, is incorrect, as it is on this principle that the bases [of the triangles], and the triangles themselves, are proved to coincide in the fourth proposition, by showing that their failing to coincide would be contrary to the corollaries to the 3rd and 5th definitions." The corollaries here referred to, are these: "Cor. Hence two straight lines cannot inclose a space. Neither can two straight lines have a common segment; that is, they cannot coincide in part without coinciding altogether;" and "Cor. Hence two plane surfaces cannot inclose a space. Neither can two plane surfaces have a common segment." With regard to these two corollaries, the students of Cassell's Euclid are well aware that the *first* contains the *tenth* axiom of Euclid, and the corollary to the *eleventh proposition* of the *first Book*. As to the *second* both parts of it seems to require demonstration, or else to be assumed as axioms themselves and not as corollaries to axioms. We suggest, however, that the coincidence of two plane surfaces, which is taken for granted in the *fourth* proposition of Book I., may be proved by taking any point in the base of the one triangle at a certain distance from one of the angles at the base, and another point in the base of the other triangle, at an equal distance from the equal angle at its base; then, drawing straight lines from the vertices of the triangles to these points, each to each, it may be proved, as in the fourth proposition itself, that these straight lines are equal and coincide with one another, when the triangles are placed in suprapposition; and as the same may be proved of all the corresponding lines that may be drawn in the same manner, in the two triangles, it is plain that their areas coincide and are therefore equal in every respect. This demonstration is, in fact, necessary to complete that of the fourth proposition of Euclid's Book I.; and from it may be at once deduced the important corollaries above referred to by Dr. Thomson, viz., that two plane surfaces cannot inclose space; neither can they have a common segment, that is, they cannot coincide in part without coinciding altogether.

With this direct mode of demonstration before our eyes, we cannot assent, therefore, to the dictum of Thomson that the sixth proposition of the first book does not contain the *first* instance of indirect demonstration, as generally stated by the editors of the Elements.

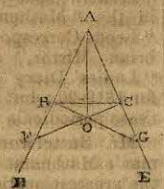
Corollary 1.—Hence every equiangular triangle is also equilateral; for any side being made the base, it can be shown that the sides opposite the equal angles at the base are equal; therefore all the three sides are equal.

COROLLARY 2.—If about two centres there be described two circles, which cut one another, their circumferences cannot coincide or intersect in more than one point on each side of the straight line that joins their centres. For if they coincided or intersected in more than one point, then upon the given straight line, which is between the centres, and on the same side of it, there might be two triangles having their sides which are terminated in one extremity of it equal to another; and also those which are terminated in the other extremity, which by the proposition, cannot be. This corollary is demonstrated by T. Peyronnet Thomson, before he gives the *first* proposition of Book I. in his "Geometry without Axioms."

EXERCISE.—In the figure of Prop. V., Book I., let a straight line be drawn from the point A to the point of intersection of the two straight lines BG and FC.* It is required to prove that this straight line will bisect the angle FAG.

In figure (G), let the straight line AO be drawn; then it is required to prove that the angle FAG is bisected by this straight line, that is, that the angle EAO is equal to the angle GAO.

Fig. G.



In Euclid's demonstration of the *fifth* proposition it is shewn that in the two triangles BFC and CGB, the angle BCF is equal to the angle CBG; but, in the triangle BOC, the angle BCO is equal to the angle CBO; therefore, the side BO is equal to the side CO. Again, in the two triangles ABO and ACO, the side AB is equal to the side AC, by hypothesis, and the side BO has been proved equal to the side CO; therefore, the two sides AB and BO, are equal to the two sides AC and CO; and the angle ABO was proved to be equal to the angle ACO, in Euclid's demonstration of the fifth proposition; wherefore, the two triangles ABO and ACO are equal to each other, by the fourth proposition, and the remaining angles of the one are equal to the remaining angles of the other, each to each, viz., those to which the equal sides are opposite; therefore, the angle BAO is equal to the angle CAO, and the angle FAG is bisected by the straight line AO. Q. E. D.

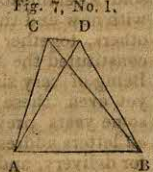
SCHOLIUM.—This suggests a readier mode of bisecting an angle than that contained in Prop. IV. of this first Book. For the construction will be as follows: Let DAE be the angle which it is required to bisect, or divide into two equal parts. In the leg AD take any two points B and F, and from the leg AE, cut off AC equal to AB, and AG equal to AF, by the *third* proposition of this book. Join BG and CF and let them intersect each other in the point O. Then, the angle DAE is bisected by the straight line AO, that is, it cut into two equal parts, DAO and EAO. The proof of this, of course, is exactly what we have given above.†

PROPOSITION VII.—THEOREM.

Upon the same base, and on the same side of it, there cannot be two triangles having their sides terminated in one extremity of the base, equal to one another, and likewise those terminated in the other extremity.

In fig. 7, if it be possible, let there be upon the same base AB, and upon the same side of it, two triangles ACB and ADB, having their sides CA and DA terminated in the extremity A of the base, equal to one another, and likewise their sides, CB and DB, terminated in the extremity B, equal to one another.

Fig. 7, No. 1.



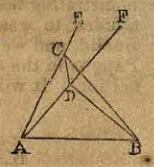
Join CD. First, in No. 1, let the vertex of each triangle be without the other triangle.

Because the side AC is equal (*Hyp.*) to the side AD in the triangle ACD, the angle ACD is equal (I. 5) to the angle ADC. But the angle ACD is greater (*Ax.* 9) than the angle BCD. Therefore the angle ADC is also greater than the angle BCD. Much more then is the angle BDC greater than the angle BCD. Again, because the side CB is equal (*Hyp.*) to the side DB, the angle BDC is equal (I. 5) to the angle BCD. But it has been demonstrated that the angle BDC is greater than the angle BCD. Therefore, the angle BDC is both equal to, and greater than, the angle BCD; which is impossible.

Secondly, in No. 2, let the vertex of one of the triangles be within the other triangle.

Produce the sides AC and AD to E and F.

Fig. 7, No. 2.



Because the side AC is equal (*Hyp.*) to the side AD in the triangle ACD, the angles ECD and FDC upon the other side of the base CD are equal (I. 5) to one another. But the angle ECD is greater (*Ax.* 9) than the angle BCD. Therefore the angle FDC is likewise greater than BCD. Much more then is the angle BDC greater than the angle BCD. Again, because the side CB is equal (*Hyp.*) to the side DB, the angle BDC is equal (I. 5) to the angle BCD. But it has been proved that the angle BDC is greater than the angle BCD. Therefore, the angle BDC is both equal to, and greater than, the angle BCD, which is impossible. Therefore, in either of the preceding cases, if AC and AD be equal to one another, then BC and BD cannot be equal to one another; and it might be shown in the same manner that if BC and BD be equal to one another, then AC and AD cannot be equal to one another.

The third case, in which the vertex of one triangle is upon a side of the other, needs no demonstration.

Therefore, upon the same base, and on the same side of it, &c. Q. E. D.

SCHOLIUM.—The third case needs no demonstration, because when the vertex of the one triangle is upon a side of the other, that is, on a point between A and C, in the triangle ACB, the sides which terminate in one extremity of the base are already unequal, which is contrary to the hypothesis.

In the demonstration, fig. No. 1, it is said "much more then is the angle BDC greater than the angle BCD;" the reason of the words "much more then," arises from this circumstance, that, by Axiom 9, the angle BDC is greater than the angle ADC; and as it has been proved that the latter angle is greater than the angle BCD, it therefore follows, *a fortiori* (that is, *from the stronger reason*), that the former angle is also greater than the angle BCD. In like manner, may be explained the same words in the demonstration, fig. No. 2.

Dr. Simson, in his edition of the Elements, says in reference to Prop. VII. just demonstrated, "there are two cases of this proposition, one of which is not in the *Greek text*, but is as necessary as the other; and that the case left out has been formerly in the text appears plainly from this, that the second part of Prop. V. clearly follows from the first part, and Prop. XIII. Book I. This part must therefore have been added to Prop. V. on account of some proposition betwixt the *fifth* and the *thirteenth*; but none of these stand in need of it, except the *seventh* proposition, on account of which it has been added: besides, the translation from the Arabic [edition of Euclid] has this case explicitly demonstrated. And Proclus [an ancient commentator on Euclid] acknowledges that the second part of Prop. V. was added on account of Prop. VII."

The following observations from the Gower-street edition, will be useful to some of our readers.

"This proposition seems to have been introduced into the Elements merely for the purpose of establishing that which follows it. The demonstration is that form of argument which logicians call a *dilemma*, and is the only case in which this species of argument occurs in the Elements. If two triangles whose conterminous sides are equal could stand on the same side of the same base, the vertex of the one must necessarily either fall within the other or without it, or on one of the sides of it; accordingly, it is successively proved in the demonstration, that to suppose it in any of these positions would lead to a contradiction in terms. It is not supposed that the vertex of the one could fall on the vertex of the other; for that would be supposing the two triangles to be one and the same, whereas they are, by hypothesis, different.

"In the Greek text there is but one (the first) of the cases of this proposition given. It is, however, conjectured, that the

* In Cassell's Euclid, p. 10, line 4 from bottom, for BC, FG, read BG, FC.

† The preceding exercise was rightly demonstrated by F. H. Williams, Salisbury; F. H., Brightwell; J. H. Eastwood, Middleton; E. J. Bremner, Carlisle; E. C. Hughes, Islington; J. Jenkins, Pembroke; T. Bulmer; T. Bocock, Great Warley; and others.

second case must have been formerly in the text, because it is the only instance in which Euclid uses that part of the fifth proposition which proves the equality of the angles below the base. It is argued, that there must have been some reason for introducing into the fifth a principle which follows at once from the thirteenth; and that none can be assigned except the necessity of the principle in the second case of the seventh. The third case required to be mentioned only to preserve the complete logical form of the argument."

Dr. Thomson says, "this proposition is merely a Lemma to the *eighth*, and may be omitted, if the second method of demonstrating that proposition be adopted." The method here alluded to was first given by Pappus, another commentator on Euclid, and we have embodied the principle of the method of Pappus in the *exercise* appended to this proposition in Cassell's edition. It will be demonstrated in our next lesson.

BIOGRAPHY.—No. X.

JOHN BUTTERWORTH,

THE LANCASHIRE MATHEMATICIAN.

BY T. T. WILKINSON, F.R.A.S.

JOHN BUTTERWORTH was born at Haggate, more commonly called Royton-lane, near Oldham, in Lancashire, on the 16th of February, 1774. He was the son of John and Ann Butterworth, of the same place, and was the eldest of a numerous family. His father being a weaver of fustians, and in very humble circumstances, was consequently unable to procure much instruction for his family; young Butterworth, however, was sent to a *dame's* school when three or four years of age, and subsequently a month or two to a free school in the neighbourhood. Before he had learned to read, the necessities of the family became urgent, and he was sent at six years of age to work at a Dutch wheel, in the neighbouring village of Royton, by which he was able to earn about 1s. 4d. per week. He was afterwards employed in winding bobbins for the use of the weavers, and at ten years of age he commenced his father's employment of weaving, at which he continued the greater part of his life. About this time he had the misfortune, by some accident, to set fire to a collier's wooden cot, which is usually erected at the mouth of a coal-mine, to protect the banksmen from the weather; he was so alarmed that he "ran away" towards Colne, where he wandered about for a couple days, but without finding any friendly roof to give him shelter. This was the only time he *was ever absent from home, even for so short a period;* on another occasion he is said to have spent an evening in Saddleworth; and these are the only instances of Mr. Butterworth's "*absenteeism*" which can be remembered. So great indeed was his love of home, that he resided *fifty-five* years in the *same* house, and it was frequently his boast that he had "never *slept* a night out of Royton-lane in his life;"—even the modern "rail" had no attraction for him, and he died without ever having seen any one of King Hudson's "iron belts." It was not until the age of twenty that he became able to read and write tolerably, he and some of his companions having instructed themselves after the conclusion of their usual employment.

A stray copy of one of the *Ladies' Diaries* first turned his attention to mathematics, and having associated with some persons in the neighbourhood who were fond of geometry, Butterworth soon began to give evidence of his rapid progress in his ever afterwards favourite study. Dr. Hutton's "Miscellanea Mathematica" now fell into his hands, being the first work he *ever purchased* on the subject of mathematics; this publication inspired him with a desire to become a contributor to such works, and having joined a mathematical club which was then in existence at Oldham, and of which the late Mr. Wolfenden was also a member, he so far profited by the advantages of the society, as soon to be enabled to answer most of the geometrical questions proposed in the periodicals of the time. In most parts of the northern counties, the works of Sir Isaac Newton are looked up to with a species of reverence and ambition not easily described, and a copy is generally purchased with the greatest eagerness. The "Principia" was not only procured, but carefully studied by Mr. Butterworth; with some of the profounder parts he was known to be well acquainted, and a glance at his numerous and elegant solutions in various periodicals will show that he was deeply versed in the writings of most of the ancient geometers. But though the geometry of the Greeks may be said to have been his principal delight, and though the imperishable writings of the Glasgow and Woolwich professors, the translations of Lawson, and other similar works, were the objects of his greatest esteem, the ancient geometry was by no means the *only* subject in which he excelled. The pages of the "Mathematical Companion," in particular, will abundantly prove that he was well read in the Fluxional Calculus and its applications. With spherical geometry, too, he was intimately acquainted, and frequently shared the honours of demonstration with Lowry and Howard. Some of his earliest productions appear in the "Student," to which work he was a constant contributor from its commencement, in 1797, to its close. He also furnished three of the last propositions in the editor's well-known "Modern Geometry." His name is also of frequent occurrence in the "Mathematical Repository," the "Enquirer," the "Leeds Correspondent," and more recently in the "Northumbrian Mirror," and "York Courant." He appears in the "Ladies' Diary" for 1816, and in the "Gentleman's Diary" for 1819-20; but for some reason or other his contributions to these periodicals were discontinued till the year 1837.

Mr. Butterworth's favourite publication was the "Gentleman's Mathematical Companion." To this work he devoted the greatest portion of his leisure for upwards of twenty years. His first contribution was printed in the number for 1801, and already proved him a geometer of no mean abilities. His subsequent correspondence exhibits a course of profound and elegant research; many valuable theorems have resulted from his labours, and so much were his papers valued by the conductors of that work, that the copy has frequently been detained from the press in order to give time for Mr. Butterworth to complete the writing out of his investigations. Many well-earned prizes served as a stimulus to still greater exertions, and altogether his mathematical career, for brilliancy, originality, and extent, can only be compared with those of Lowry, Cunliffe, Whitby, and Swale. Besides the solutions which appear under his real name, he furnished numerous others to less gifted aspirers, who were frequently unscrupulous enough to pass them off for their own. Indeed, in some publications "questions and answers" can be pointed out by the dozen, which, while they serve in some degree to elevate certain names *now* altogether "unknown to science," belong in *reality* to Mr. Butterworth; and he often regretted that *his necessities* sometimes compelled him thus to "enable others in some measure to *deceive* the public, by claiming for themselves a knowledge which they did not possess."

As Mr. Butterworth was never married, he followed the occupation of hand-loom weaving, and continued to reside with his mother until her death in 1837, his father having died some years previously. About this time steam power, had almost superseded the hand-loom, and in consequence of indifferent health and the very low wages paid for this kind of labour, he relinquished the use of the shuttle and commenced a small day school, in his own house, but, as might be expected, with no great success. Mr. Binney, of Manchester, paid him a visit in December, 1843. His school *then* consisted of twelve scholars, whose wages amounted to 2s. 10d. weekly; he also sold sweatmeats, and several other trifling articles, and this, with now and then a trifle for private lessons to mechanics and others, together with occasional assistance from his friends, constituted the total income of "this nobleman of nature." Being of very simple habits, his wants were consequently few; yet even these were not always promptly supplied. For some years previously to his death, he was obliged to return *all* letters addressed to him, on account of the extra expense for delivery, and on one occasion, "stern necessity" compelled him to dispose of a portion of his books for the small sum of £2;—this, to *him*, would have been a severe privation had not the purchaser kindly allowed him to peruse them whenever he had occasion. In 1842-3 his health rapidly declined, a disease of the lungs almost continually harassed him with distressing fits of coughing; and being now near seventy years of age, it was impossible for him to endeavour to support himself. His case was considered so deserving, that three of his most intimate

friends, Mr. Buckley, of Delph; Mr. Heap, of Royton; and Mr. Ogden, of Shaw, determined to bring it before the public, and for this purpose addressed a memorial on his behalf to Eaton Hodgkinson, Esq., of Manchester. This worthy gentleman took the subject up with his usual liberal spirit;—the Council of the Literary and Philosophical Society of Manchester voted Mr. Butterworth a donation of £10 from their funds; Mr. Binney visited Mr. Butterworth in December, 1843, and received from his own lips a narrative of his life, which confirmed the preceding sketch in almost every particular.

This worthy man resided at Haggate, a small hamlet situate between Royton and Chadderton, and was known in that neighbourhood by the name "Jack o' Ben's." The writer of this on going to visit him, soon after made many inquiries in the neighbourhood for John Butterworth, and was directed to one of that name who was a shopkeeper, and another a beer-seller, and a third a schoolmaster, but not to the right one. On stating that the person he wanted was a mathematician, a woman said, "Oh! it's owd Jack o' Ben's you want," and immediately showed the house. On entering the cottage, Mr. Butterworth was found in a small narrow room, about two yards in width, where he taught the few children by means of which he chiefly supported himself. He was a fine, stout old man, having an extraordinary massive head, covered with snow white hair, and a countenance beaming with intelligence and good nature. Mr. Eaton Hodgkinson, who had been intimately acquainted with him for between twenty and thirty years, and who is so competent an authority, considered that, as a geometrician, he was scarcely excelled by any other man in the kingdom. In private life, whether we consider his duties to his parents or to his neighbours, during his long life, there is but one opinion,—that he was a most worthy, sober, and upright man.

Mr. Binney stated that "Mr. Butterworth's manners were very pleasing, and showed more thorough natural gentility than he ever had previously met with. On his return from seeing him, he felt that many of the best and greatest men who had appeared on the earth were left to sink down unknown and forgotten. Such a pure lover of truth for its own sake has probably very rarely been met with. He saw him several times afterwards, and always with increased admiration."

During the last two years of his life, Mr. Butterworth received from the society the sum of five shillings weekly; and this, with frugality and care, enabled him to live comfortably. He died on the 3rd of December, 1845, in the 71st year of his age, leaving the whole of his furniture to his surviving sister, and his books to his nephew Joseph. His remains were interred in Royton Churchyard; Mr. Hodgkinson, Mr. Fairbairn, Mr. Binney, and many others, following them to the grave. The funeral, which took place on the first Sunday in December, 1845, showed how much the deceased was respected. Nearly 200 humbly but respectably dressed persons, with the clergyman of the place, walked before the coffin all the way from deceased's house to the church. After the funeral service had been read, the body was deposited in its last resting-place by the light of the moon.

The spot where he rests is marked by a plain stone, bearing the following inscription:—

"In memory of John Butterworth, of Haggate, Royton, who died December 3rd, 1845, aged 71 years.

"Though in humble life, he by self-instruction obtained a profound acquaintance with the mathematics.

"His numerous contributions to the leading mathematical journals during half a century, on the various branches of the ancient geometry, gained him a high reputation, and increased in this neighbourhood an ardent love of that sublime study; whilst his unaffected simplicity of manners and his blameless life commanded the esteem of all who knew him.

"This simple tribute of respect is inscribed at the instance of a few members of the Literary and Philosophical Society of Manchester, and others, in the hope that future votaries to the sciences may be stimulated and encouraged by his honourable example."

Several sketches of Mr. Butterworth's features were taken after his death, one of which, in the possession of Mr. Buckley, is said to be a striking likeness. The following lines finely concentrate the history of this poor but eminent man:—

ELEGY.

To the Memory of John Butterworth, the celebrated Mathematician.

Though poor through life, and oft by want oppress'd,
Yet with bright talents Butterworth was blest,
And in chill poverty those talents shone,
Like radiant star beams in the frigid zone.
He was a genius bright, whose leisure time
Was hallowed by pursuits the most sublime;
He soared to abstruse science, and was there
A thing of glory, radiant, rich, and rare.
There, in deep musings, he, by reason's light,
With judgment's aid, sought precious truths and bright;
And in his skilful search fail'd not to find
These everlasting diamonds of the mind;
With them he graced the mathematic page,
And with geometry surprised the age.
Though bright in science, yet not there alone—
He glow'd in virtue, in religion shone;
Felt for his fellow-men as all men should,
And rank'd himself amongst the wise and good.
Though scanty were his means, yet he was free,
In soul the very source of charity:
His bounty came not like a summer flower
To grace with flaunting sweets the sunny bower;
But like the Christmas rose, whose humble form
Gives its sweet glories to the gloom and storm,
With cautious step the hallowed path he trod
That leads the Christian safely to his God;
Cheer'd on by virtue, well his course he ran,
And gain'd the prize high Heaven holds out to man.
'Tis finish'd now, the pilgrim's gone to rest;
But, as the sun leaves glory in the west,
A scene of grandeur he has left behind,—
The bright effusions of his radiant mind.

JAMES TAYLOR.

Burnley, Lancashire,

A CRY FROM OUR PRISONS, SAYING, "EDUCATE! EDUCATE! EDUCATE!"

Do you never hear that cry, reader? Did you not hear its thrilling tones the last time you passed by that huge, dark, lowering building, which rises near the centre or in the outskirts of your city, as if foreboding woe and terror, unless the evil it represents be checked? You are a man and a Christian, and *have*, therefore, heard the appeal. But the hearing was faint; the appeal passed unheeded; in the bustle and turmoil of the world you have lost from view the terrors of the prison—the number of souls there lost; the amount of power there wasted; the fine faculties there perverted; the capability of happiness there destroyed, the good there squandered, the sufferings there endured. These terrible plagues you have forgotten, and therefore do you go about with a smiling face, and enjoy the blessings of a happy home. Your complacency is ill-founded. Unless you hear reason in the case, and act as reason dictates, your complacency is unnatural. Probably you think you have heard reason, and now acquiesce in an evil you fancy you cannot cure. "Crime is inevitable." Say not so rashly. And if some crime is inevitable, do not affirm that crime in general is inevitable. Crime, like other evils, has its causes. It has also its remedies. Ignorance is one cause of crime. Lessen ignorance, you lessen crime. A well-instructed mind is a preventive of crime. Make education co-extensive with population, you diminish crime. Hence is it that every prison, to the intelligent mind, exclaims aloud—"Educate, Educate, Educate!" The school or the prison? That practically is the option. In another view the option is this—The school or social peril? Yes, society cannot safely go on in its present course. Rapidly is the population of these kingdoms growing and multiplying. Rapidly is crime augmenting in our borders. Prisons increase more rapidly than schools. Prison-discipline receives more attention than school-discipline. Our convicts, refused admission into our colonies, are cast back as vile human refuse on the mother country. New nests of wickedness, new centres of social peril, are even now building in or near our towns, already reeking with foul masses of ignorance and crime. Up! Up! we say, and Educate! At least keep the young from these festering wens of a corrupt civilisation. The school or the prison—which? The school or social peril—which?

A KEY TO THE EXERCISES IN THE LATIN LESSONS.

(*Continued from page 375, Vol. II.*)

By JOHN R. BEARD, D.D.

Page 109, col. 1, vol. II.—LATIN-ENGLISH.

After I have dined, I shall take a walk; we will dine to-morrow in the garden; did you not hear that we shall dine in the garden to-morrow? as long as any hope remained in my mind, I fought for my country's liberty; now during three months have the enemies besieged our city; I am not so iron-hearted as not to be moved (I am not that iron-hearted one who is not moved) by the tears of all these with whom you see me surrounded; many think that they will appear kind to their friends, if they enrich them in any way whatever; take care lest you decide concerning any matter, before you have carefully investigated it; your letters grieved me greatly; if any one has been bitten by a mad dog, madness siezes him; as long as you were speaking, the boy listened most attentively (hung upon your lips); have you become liable for a friend? I have become liable; many things, both in the senate and in the forum, were either prudently foreseen, or acutely replied to by Laelius; Cicero related that Dionysius, in order that he might not entrust his neck to a barber, taught his daughters to shave him; and so (he narrated) that in this filthy and menial office the royal virgins, as barber-girls, clipped the beard and hair of their father; so great is the power of goodness, that we love it either in those whom we have never seen, or, what is more, even in an enemy; Alexander not only killed Callisthenes, but even tortured him; the size and importance of the Roman republic was wonderfully (in a wonderful manner) increased by wars carried on with foreign tribes and nations; the dagger has been wrenched from the hands of the assassin; (by how much) the more you yield to grief, (by so much) the more intolerable will it be; all excellent men greatly bewailed the downfall and ruin of the Roman republic.

Page 109, col. 1, vol. II.—ENGLISH-LATIN.

Prandi; amici mei pranderunt; postquam amici mei pranderint, ambulabunt; audistine me in horto pransurum esse? audivi te a tonstriculâ tonsum esse; non est verum, tonsor me totondit; da mihi illam sicam; extorque sicario sicam de manibus; mater paterque adolescentis interitum lugebunt; extorsi sicam servo de manibus; quid vides? video urbem circumsessam; patria nostra sapientiâ industriaque valde aucta est; bello industria sapientiaque potiores sunt.

Page 109, col. 2, vol. II.—LATIN-ENGLISH.

The leader soothed the excited minds of the soldiers with gentle words; my mind was wonderfully delighted and soothed by reading the poems of Virgil; so agreeable to me was the making of this book, that it removed all the irksomeness of old age; I will not come to you before I have wiped away all my grief: has the table been wiped yet? they burned 40,000 books at Alexandria; I do not doubt that, in a short time, the whole of Germany will burn with war; who is there on whom fortune has always smiled? I know not why I have been laughed at by you; thus have I persuaded myself, thus do I feel that our minds are not mortal; who believes that the citizens will object to peace? who is always confident that that which is frail and perishing will remain steadfast and firm? the glory of the Romans has remained till our time; Lycurgus commanded that all citizens should eat in common; not he, who when commanded, does anything is miserable, but he who does it unwillingly; I am persuaded that the recollection of this most frightful war will not only always cling to this people, but also to the common talk of all nations; when the enemies were overcome, a fresh hope of safety shone upon the state; the soldiers, in their journeyings, underwent many hardships; they sweated, and they were cold; my father urged me in the letter, that on every opportunity I should send a letter to him; how shall the spark of intellect, which has now shone forth in the boy, lie hidden in the man? you loaded me with kindnesses so great, that I never dared to wish for them; I rejoiced greatly at the politeness of your friend; at Athens, it generally fell to the lot of every excellent man to be driven into exile (at Athens, it was accustomed to happen to each excellent man that he should be driven into exile).

Page 109, col. 2, vol. II.—ENGLISH-LATIN.

Soleo de amicorum meorum fortunâ gaudere; gavisi sunt; gaudebunt; sorores meae gavisae sunt; fortuna fortibus hominibus arridet; putasne fortunam fortibus arrisuram esse? nego fortunam fortibus semper arridere; deridet philosophum; cur philosophus a puero deridetur; non est dubium quin philosophi a stultissimis derisi sint; oratores student excitos civium animos permulcere; persuasum est mihi oratores excitos hominum animos permulcere debent; Napoleone regnante, tota Europa bello arsit; quis scit fortunam ipsi sibi unquam arrisuram esse? non pacem dissuasi, et confido mihi te nunquam pacem dissuasurum esse; boni bona suadent; ausi sunt bellum suadere; gavisus sum te loqui ausum esse; Ciceronis sapientia in orationibus suis eluxit; quanta venustas verborum in Horatio elucet (shines)! belli semina remanent; quousque belli semina in mundo remanebunt? nescio quamdiu amici mei in urbe remansuri sint; frater meus me ursit ut ad te litteras darem; pater meus jussit mihi ut in se haererem.

THE KID AND THE WOLF.

A fable by Aesop.

A kid, standing under cover of a house, abused a wolf who was passing by. To whom the wolf said:—"Not you, but your covering has abused me." Place and opportunity often render timid men bold.

THE CRANE AND THE PEACOCK.

A fable by Aesop.

A peacock, spreading out his feathers in the presence of a crane, said:—"How great is my beauty and your ugliness." But the crane, flying forth, said:—"And how great is my swiftness and your slowness." This fable warns us not, on account of any good which nature has allotted to us, to despise others, on whom nature has bestowed other advantages, and perhaps greater ones.

Page 123, col. 2, vol. II.—LATIN-ENGLISH.

The temple of Janus has been closed twice since the reign of Numa; if it is allowable to laugh, yet immoderate laughter is blamed; if you have allowed that God is, you must confess that the world is governed by his counsel; on the minds of all, God himself has impressed an idea of God; the power of conscience is great, so that those who have sinned always (semper) think that punishment is before their eyes; virtues have been so coupled and joined together, that each one partakes of all; Caesar, besides ten bushels of corn, and the same number of pounds of oil, also allotted to the people three hundred sesterces to each man; he who distrusts the durability of his advantages must fear lest, having lost them, he should sometimes be miserable; Plato separated the two parts of the mind, emotion and desire; he placed emotion in the breast, desire beneath the diaphragm; the whole of Gaul has been divided into three parts; if any one has injured you without intending it, you ought not to be angry with him; if you have given up yourself to a voluptuous and effeminate life, in a short time all the sinews of virtue will be weakened; why have you insulted me? know you not that I have been deceived by a faithless friend? all the spectators applauded the actors who performed their parts well yesterday; the opinion respecting the happy life of Epicurus has been rejected by all the more acute philosophers; there are many who think that the happiness of life has been placed in money scraped together.

Page 123, col. 2, vol. II.—ENGLISH-LATIN.

Domus mea heri clausa est; tuam domum claudam; templum clauditur; templum clausum erit; puer a scholâ exclusus est; concedunt esse Deum; confitendum est illis Deum esse; in omnium animis ipsius notionem impressit Deus ipse; viritim dividam centum frumenti modios; nonne virtutes copulatae sunt? qui diffidit Deo, ei timendum est. ne aliquando sit miser; diffidisne Deo? boni concedunt Dei voluntati; mus plagas corrodit; spectatores bonis histrionibus applaudent; naves evadunt e manibus hostium; nescisne Galliam in tres partes divisam esse?

Page 123, col. 2, vol. II.—LATIN-ENGLISH.

I am greatly grieved that you have been reduced to such grief and distress; why have you thrust that person from the house? I hope that my sick friend will escape from the disease; if the mind has escaped from the body, then for the first time will it live and thrive; the sun having risen, darkness was scattered; the courage and penetration of the leader drove away all dangers which hung over the city; Marius hid his aged body plunged into the marshes; the heavenly mind, depressed from its most lofty dwelling-place, was let down, as it were, to the earth; the laws, for a long time buried by the power of the enemies, at length emerged; the eternal God has sown minds in human bodies; all things which are now enclosed by arts were formerly scattered and spread abroad; Epaminondas fell with a severe wound at the battle of Mantinea; Epaminondas overcame the Lacedaemonians; Epaminondas asked whether his shield was safe, Epaminondas, when he had overcome the Lacedaemonians at the battle of Mantinea, and saw that he was dying from a severe wound, as soon as he opened his eyes, asked whether his shield was safe; when he had heard from his weeping friends that it was safe, he asked whether the enemies had been put to flight; when he had heard that, also, he commanded that the spear by

which he had been pierced should be pulled out; all other things are uncertain, frail, and moveable, virtue alone is fastened by the deepest roots; Cicero fixed all his cares and reflections in the safety of the republic; he who has once departed from the truth is not generally believed even when he is speaking the truth; I do not believe that you will ever turn aside from the path of virtue; tell me for whom you have twined this garland; a great multitude of men flocked towards the city to see the public games.

Page 123, col. 2, vol. II.—ENGLISH-LATIN.

Ubi Marius se occultabit? Marius palude se occultavit; militesne corpora palude occultabunt? hominum animi e coelo demersi sunt in terram; qui demersi sunt, emerserunt; miles eo vulnere gravi exanimatur; duo homines hastis transfixos vidi morientes in proelio; miles moriens dispexit et rogavit hostes ne fugati essent; omnia alia caduca sunt, Deus unus permanet, et unquam permanebit, defixus in altis vitae sui ipsius radicibus; adolescens de virtutis via deflexit; putasne discipulos tuos de sapientia deflexuros esse? mali in miseriis demersi sunt; soror mea poetae coronam nexuit; tibi, carissimae matri, coronam nectam, hominum multitudo in urbem confluent; venient reginam visum et ludos publicos spectatum; nebulae dispersae sunt; sol eluxit; age, nos ambulemus et aves cantare dulcia carmina audiamus; in omnium animis Deus virtutis semina sparsit.

THE PEACOCK.

A fable by Aesop.

The peacock bitterly complained before Juno, his mistress, because sweetness of voice had been denied him, while the nightingale, a bird with so little beauty, excels in singing. To whom Juno said:—"And properly so, too, for it was not proper that all advantages should be bestowed upon one."

THE GEESE AND THE CRANES.

The geese and the cranes formerly fed in the same meadow. When the owner of the meadow came, the cranes easily flew away, but the geese, hindered by the weight of their body, were caught and slaughtered. Thus, when the poor are caught in the same crime with the more powerful, only those suffer punishment, while these escape uninjured.

Page 124, col. 1, vol. II.—LATIN-ENGLISH.

The just father inflicts punishment on his son; the judge fined the accused citizen a very heavy fine; the consul severely punished his grandfather (who was) enfeebled by years; Cicero was not able to inflict (for suscipere read capere) the punishment due to his (for suo read ejus) wickedness; the conquered Carthaginians may suffer punishment from you; I am severely punished for my rashness; I shall be punished to-day for your bad words; you will pay the penalty in your hot blood; the judges inflicted very severe punishment on wicked men.

Page 124, col. 1, vol. II.—ENGLISH-LATIN.

Poenas repetam malis pueris; mali pueri poenas dabunt; mali pueri poenas dignas suo scelere pendent; judex poenas gravissimas ex sceleratis hominibus sumsit; victi vos victoribus poenas sufferent; solvi poenam; sumam ex illis poenas.

POEMS COMPOSED BY JOSEPH BLACKMAN,

OF RYE, (WHO WAS BORN BLIND).

ODE TO SPRING.

HAIL, lovely season! time of mirth,
An emblem thou of nature's birth,
When birds are seen on every spray,
While chanting forth their simple lay.

The trees are now with verdure crown'd,
And Spring's green mantle clothes the ground,
Now herbs and flow'rets deck the field,
And their sweet balmy odours yield.

The dewy mead and wood-crown'd height,
Now seem rejoicing in the light;
While gentle zephyrs fan the air,
And every object looks so fair.

How sweet at such a time to rove
In lonely wood or shady grove;
And while we tread the verdant sod
To meditate on nature's God.

O Lord! thy works are manifold,
Their wond'rous power can ne'er be told;
Be Thou adored! by great and small,
Thy goodness reacheth unto all.

HYMN ON THE SABBATH.

HAIL, sacred day! supremely blest,
A boon to mortals given;
From all our earthly toil to rest,
And fit our souls for heaven.

When in the house of God we meet
And celebrate his praise,
Then all in humble strains unite
To heaven their voice to raise.

Thrice happy he who entrance gains
Within that blissful place,
Where one eternal Sabbath reigns,
And all is joy and peace.

There we shall join in songs of praise
With all the saints above,
And celebrate in endless lays
Our great Redeemer's love.

ON THE STUDY OF NATURE.

WHAT is all the rich man's treasure
To the pure unmixed pleasure
Nature's contemplation yields,
When we view the woods and fields?

Oh! what wonders meet our eye,
On the earth and in the sky!
Every star and every flower
Speaks the great Creator's power.

See the shining orbs above!
How in majesty they move,
As their office they fulfil,
Doing their Creator's will.

See the sun in bright array!
When he ushers in the day,
At whose presence mother Earth
Seems rejoicing with new birth.

See when night's dim shadows fall
Cov'ring this terrestrial ball,
Moon and stars in glory shine,
Tell their Maker's power divine.

ON THE BLIND BEING ABLE TO READ THE BIBLE.*

WHY should I murmur or repine
At Providence that I am blind?
Since I the word of God can read,
This is a blessing great indeed.

Oh! may I read and understand,
And meditate on God's command;
That glorious day, oh! may I see,
Which lasts throughout eternity.

CORRESPONDENCE.

SELF-EDUCATION BRIEFLY CONSIDERED.

SIR,—It frequently occurs to my mind, as we live in an age of progressive discoveries, wherein the powers of the human faculties wonderfully develop themselves, and an age in which reading is become so general, that it is a duty which every man owes both to himself and to society, (if he has learned to read, though he may not have been greatly instructed therein), to make all the efforts he can towards his own improvement. It is my firm opinion, that there are many who, being initiated into the alphabet, and able to spell and express the sounds of a few words when spelled, *can by the help of the proper books of instruction* so far improve themselves in the sciences, and in morality too, if they attempt so to do, that they ultimately may attain to a great proficiency, and bring the cultivation of their minds to such a high degree as would have utterly astonished the men of past ages, and even some of those who moved in an elevated sphere of life. I hereby bear

* Bibles are now printed in Alto Relievo, for the use of the blind. This noble invention affords them the unspeakable advantage of reading and studying the Sacred Scriptures.

record, that if a person has been successfully assisted in making but a few steps in the art of reading, he may by perusal, study, and research, in books of education, so improve his ideas, strengthen his mental capabilities, enlarge his understanding, and from time to time procure additions to his knowledge, as to enable him to make any attainment in mathematical and philosophical pursuits. Indeed, that an inquirer can thus make satisfactory progress in any science, I myself am an instance; for I was in childhood, as well as through all the following years of my life, an invalid, and of course disabled from going abroad to any profession, or gaining any remuneration whatever for labour; and being sometimes not expected long to survive, I seemed to be accounted not worth either the pains or the expense of education, except that of instilling into my mind the basis of good moral and religious precepts. The early seeds thus sown, however, did, in after years, assist my inclination to choose the good and hate the evil principles; and to such admonitions, my affectionate and pious mother was always ready to attend, greatly to the future guidance and happiness of her offspring. Between my mother, brothers, sisters, and some others, I was at length brought to an acquaintance with the English alphabet; then having learned those words which were easy, and best adapted to my juvenile comprehension, I undertook to manage the progress of my own education, and happily succeeded. The acquisition of knowledge has ever been to me such a source of pleasure, as to amply reward me for all my toils and studies in acquiring its possession. Let necessity of the requisite assistance and right discrimination guide you in the choice of the proper books for self-improvement. At the first, a good spelling-book, with the words accented, is a great help in learning to read; then copy-books for writing, containing letters, sentences, and instructions should follow; to these let a book of English grammar and works on English literature succeed; then other books for each science that you wish to acquire may be obtained. But let youth be diligent and persevere; otherwise progress will be uncertain and slow, and disappointment will be the sure parent of ignorance. I am, sir, &c,

HENRY HALLETT.

West Road, near Bridport.

LESSONS IN MECHANICS.—No. IX.

SMITHS.

WE shall have so much to say of this class of operatives and the nature of their employment in another part of our series, that we may dismiss them here with the remark that they are assuming in our day a new position—not only that of builders' helps, but builders. The consideration of the subject, however, will come more properly under the head of "Engineering."

PLUMBERS, GLAZIERS, PAINTERS, DECORATORS, ETC.

All these operatives assist the builder in the completion of his work, and all more or less add to the comfort and convenience of a building by their labours. These several employments will come under consideration further on; but we may remark in passing, no building may be regarded as really substantial unless every department is thoroughly well done. We are all too much in haste, and run up buildings in a few days that ought to have occupied months. No hasty work lasts; no work that does not last is cheap; hence we defeat very often the straining after economy which yields to the temptation of low contracts and secures bad work.

AGRICULTURAL BUILDINGS.

Agricultural buildings, which are not usually intrusted to professional architects, deserve more attention than they commonly receive. It is necessary that the builder of farmsteads should be acquainted with the uses to which the various buildings he erects are to be put. The main points to be considered are—convenience of arrangement, economy of material and space, ventilation, good drainage, and a facility for obtaining a plentiful supply of fresh water.

The most convenient form for a homestead is that of the parallelogram. It is well, when practicable, to have one side of this parallelogram open to the south. The following hints, abridged from various practical works on the subject, will be useful in respect to the arrangement of the farm:—

The barn, being generally the highest building in the farmstead, should be placed on the north side of the yard, as the position affords the greatest shelter from cold winds. As a good portion of the food consumed by the live stock is prepared in the barn, the cattle shed and stables should be contiguous. The granary should adjoin, as by this arrangement much labour will be saved in carrying fodder to and fro. The barn should contain two bays for the storing of unthrashed corn or straw, with a thrashing-floor in the centre. The thrashing-floor being thus placed, carts and wagons may be brought in to unload during harvest, or from the ricks. The bays should be sufficiently capacious to hold the contents of a moderately sized rick, although on account of the cost of erection it is desirable to make them as small as possible.

The following suggestions with regard to the construction of the barn are important:—A solid wall should, under any circumstances, be erected to the height of four or five feet from the ground, which will give solidity and strength to the building, prevent dampness, and be a great check to the ingress of vermin. The whole area should be covered with concrete, composed of six parts of clean gravel (or small stone and sand) to one of ground stone or lias lime, to the depth of about six inches. The thrashing-floor should be formed with oak planks laid on oak sleepers; the space under the floor between the sleepers being filled with broken bottles or flint stones, up to within half an inch of the under-side of the planks, well rammed, and grout cement or mortar poured over the whole, so as to form a compact mass, leaving no harbour for rats or other vermin. The doors should be divided, both vertically and horizontally, to avoid the great strain which the storey-posts would otherwise be subject to: when made in this manner, they are more convenient and easily opened and shut. A portion of one of the bays should be appropriated for conveniently feeding the thrashing machine, and behind this bay the machine-house should be placed; the area of which may be covered with concrete a few inches in thickness, as described for barn floors.

The granary should be raised about seven feet from the ground; the lower space may be used as a straw shed, chaff-house, or general provision store. It should also adjoin the machine-house, that the power there employed may be used for bruising oats and oil-cake, grinding beans, and cutting chaff and turnips. The objection to placing the granary over the thrashing-floor of the barn is that, unless very high up, it prevents the free ingress of laden carts—a matter of consequence in harvest time. The floor should be of yellow deal, one and a-half inches thick, and laid on joists, supported by girders of sufficient strength, as the weight it has to sustain will be great. The joists should not have a longer bearing than eight feet, particularly as the girders may be supported by columns rising from the shed below. The walls should be lined with boards to the height of six feet. This will secure from damp. Much grain is spoilt by damp, as all walls more or less communicate moisture from the exterior. A boarding on the interior will guard against this. The best mode of ventilation is by fixing in the back and front walls, and above the boarding just mentioned framed boarding, hung on pivots, and made to work as Venetian blinds. They will admit a free current of air, while at the same time it will exclude all wet.

Cattle sheds in a farmstead are of primary importance. The chief requisites are warmth, with a regular temperature; good ventilation, free from draughts; perfect drainage; convenient mode of foddering the cattle, and of cleaning the shed; plentiful supply of water, and economy of space. The sheds should be roomy, and so constructed as to allow of extension if required. As to the dimensions of the sheds, the builder should be guided by the shape and size of the cattle. From the following data cattle buildings may be erected in the most economical and commodious manner:—"A moderately sized horse is about 8 feet long, 6 feet 6 inches high to the top of the head, 2 feet broad behind, and 10 inches across the head. A bullock, about 7 feet 6 inches in length, 5 feet in height, 2 feet 6 inches broad at the hind quarters, and about the same across the horns (although the latter dimensions depend upon the breed of the animal). Sheep are on the average 3 feet 6 inches long, 1 foot 8 inches across the hind quarters, and about 12 inches at the head. Swine are about the same size as sheep, varying according to the breed."

A circular shed will be found more commodious and convenient than any other form.

ANSWERS TO CORRESPONDENTS.

MORTALIS BELLICOSUS.—The price of our "Lessons in Spanish" is 3s. 6d., free per post.

D. J. W.—Your writing is defective. It is plain, but not business-like; it wants freedom and regularity. A little careful practice, with the help of our "Model Copy-Books," would be really very useful to you.

A POOR WORKING YOUTH may safely follow the instructions given in our "Lessons in English." By their help he may become proficient in that most important branch of education—his own tongue. Let him not consult other works on the same subject. All that he needs is given in the "Lessons." There will be no objection to his trying Short-hand.

OLIVER TWIST AND OTHERS.—The re-issue of THE POPULAR EDUCATOR is published at *three-halfpence* per number, and not at one penny, as erroneously stated in a former number. The mistake was the result of an oversight in the revision of "Answers to Correspondents."

LESSONS IN GEOGRAPHY.—No. XXIII.

MAP OF AFRICA

Fig. 4.—Negro Race.

AFRICA, the mystery of ancient and the problem of modern times, is the south-western part of the old world. This continent is situated chiefly in the torrid zone, the exceptions being Egypt, Barbary, and the Cape-colonies; it was considered as almost wholly uninhabitable by the ancients; and it has not greatly improved in character, in this respect, judging by the accounts of all the recent exploring expeditions into its interior. Africa extends from north to south about 5,000 miles; the most northern point being Cape Blanco in Lat. 37° 20′ N. and Long. 9° 48′ E.; and the most southern point, Cape Lagullas in Lat. 34° 51′ S. and Long. 19° 57′ E. It extends also from west to east, about 4,600 miles; the most western point being Cape Verde in Lat. 14° 45′ N. and Long. 17° 32′ W.; and the most eastern point, Cape Guardafui, in Lat. 11° 41′ N. and Long. 51° 12′ E. The equator or burning line passing over the Gulf of Guinea, crosses this continent over Lower Guinea on the west, near the island of St. Thomas, and over Zanguebar on the east, near the mouth of the river Juba; it thus cuts off about one-third of this continent to the south in the form of a peninsula; the tropic of Capricorn cuts off from this peninsula, in like manner, a smaller one containing the Cape colonies and Caffraria. The tropic of Cancer cuts off northern Africa, crossing Sahara, or the Great Desert, and the Libyan Desert, and dividing Egypt from Nubia. Between the two tropics, and between the meridians of 10° and 30° east, that is, nearly those of Tunis and Alexandria, there is a vast tract of unexplored country, especially south of the equator, which is little less than one half of the continent: the only part of this vast region which has been partially explored being the countries that lie around Lake Tchad. The surface of the whole continent is reckoned to contain rather less than 12 millions of square miles, and rather more than 70 millions of inhabitants; which gives, on an average, about 6 inhabitants to every square mile.

Fig. 6.—American Race.

Africa is bounded on the north, by the Mediterranean Sea; on the south, by the great Southern Ocean; on the east, by the Atlantic Ocean; and on the west, by the Indian Ocean. The Red Sea and the Gulf of Aden lie to the north-east of this continent; and the Mozambique Channel, 250 miles in width, to the east, between the south-east coast and Madagascar. The South Atlantic and the Indian Oceans commingle their waters south of the Cape of Good Hope; the Atlantic washes the shores of upper and lower Guinea, in the Gulf of Guinea, and the Bights or *Bays* of Benin and Biafra. The Strait of Gibraltar separates the Pillars of Hercules, or the rocky coasts of Barbary and Spain. In the Mediterranean, are the Gulfs of Sidra and Cabes, on the north of Barbary; and the Delta of the Nile, north of Egypt. South of the Cape colonies, are St. Helena Bay, Table Bay, False Bay, Algoa Bay, &c.; and on the east coast, are Delagoa Bay, Sofala Bay, and others of less name and importance.

Fig. 5.—Malayan Race.

The following is a list exactly similar to those lists which we have given under Europe and Asia, of the countries, kingdoms, empires, and states of Africa, as far as they are at present known; but what future discoveries may reveal we can only conjecture. Some races and tribes of men have disappeared from the old world, among which may be reckoned the ten tribes of Israel.

COUNTRIES, KINGDOMS, EMPIRES, AND STATES OF AFRICA.

Countries.	Capitals.	Latitudes.	Longitudes.	Present Ruler.	Form of Government.
Egypt — Lower	Alexandria	31° 13′ N.	29° 53′ E.	Said Pasha (nom. sub. to Turkey)	Viceroyalty
Egypt — Middle	Grand Cairo	30 3	31 18		
Egypt — Upper	Siout	27 13	31 14		
Nubia	Khartoun	15 30	32 40		
Abyssinia	Gondar	12 10	37 50	Native Princes	Monarchy
Barbary States — Algeria	Algiers	36 49	3 5	Napoleon III.	Absolute Monarchy
Barbary States — Morocco	Morocco	32 7	8 5 W.	Native Prince	Monarchy
Barbary States — Tunis	Tunis	36 47	10 6 E.	Native Bey	Beyship
Barbary States — Tripoli	Tripoli	32 54	13 11	Native Pasha	Pashalic
Barbary States — Sahara	Mourzouk	25 58	14 8		
Central Africa — Western Soudan	Timbuctoo	17 25	2 40	Native Princes	Monarchy
Central Africa — Eastern Soudan	Saccatoo	13 9	4 34		
Central Africa — Unexplored Territory					
Western Africa — Senegambia	Fort Goree	14 40	17 25 W.	Napoleon III.	Absolute Monarchy
Western Africa — Liberia	Monrovia	6 28	10 45	President Roberts	Republic
Western Africa — Ashantee	Coomassie	6 45	1 24	Native Princes	Monarchy
Western Africa — Dahomey	Abomey	7 20	2 30 E.		
Western Africa — Sierra Leone	Freetown	8 30	13 14 W.	Victoria I.	Limited Monarchy
Western Africa — British Guinea	Cape Coast Castle	5 6	1 13		
Western Africa — Dutch Guinea	El Mina	5 5	1 22	William III.	Limited Monarchy
Western Africa — Angola	St. Paul de Loando	8 48 S.	13 8 E.	Maria II.	Limited Monarchy
Western Africa — Benguela	St. Philip de Benguela	12 34	13 20		
South Africa — Cape of Good Hope	Cape Town	34 22	18 24	Victoria I.	Limited Monarchy
South Africa — Natal Colony	Pietermauritzberg	29 10	30 50		
South Africa — Caffraria	King William's Town				
South Africa — Betchuana Country	Lattakoo	26 50	24 10	Native Chiefs	Chieftainship
Eastern Africa — Sofala	Sofala	20 11	34 41	Maria II.	Limited Monarchy
Eastern Africa — Mozambique	Mozambique	15 1	40 42		
Eastern Africa — Zanguebar	Magadoxa	2 2 N	45 20	Sultan of Muscat	Monarchy
Eastern Africa — Ajax and Samouli	Berber	10 5	44 20		
Western Islands — The Madeiras	Funchal	32 38	16 56 W.	Maria II.	Limited Monarchy
Western Islands — The Cape Verde	Mindello	16 56	25 6		
Western Islands — The Canaries	Santa Cruz	28 43	17 45	Isabella II.	Limited Monarchy
Tropical Islands — Ascension	George Town	7 56 S.	14 24	Victoria I.	Limited Monarchy
Tropical Islands — St. Helena	James Town	15 55	5 45		
Eastern Islands — Madagascar	Tananarivo	19 10	46 10 E.	Native Prince	Absolute Monarchy
Eastern Islands — Bourbon	St. Dennis	20 53	55 27	Napoleon III.	Absolute Monarchy
Eastern Islands — Mauritius, Seycheiles, &c.	Port Louis	20 10	57 29	Victoria I.	Limited Monarchy
Eastern Islands — The Comoros	Johanna	12 11	44 22	Native Prince	Monarchy

The African *islands* are so particularly noticed in the preceding list, that of them little more need be said in a general view. Madeira and Porto Santo lie off the west coast of Barbary. So do the Canaries, of which the chief are Teneriffe and Grand Canary; the former remarkable for its high mountain called the Peak of Teneriffe, which rises to the altitude of 12,236 feet above the level of the sea, or nearly 2⅓ miles of perpendicular height. Of the Cape Verde Islands, the chief are Santiago and St. Vincent; the chief town of the former being Porto Praya, formerly the seat of government, which has been transferred to Mindello, the chief town in the latter. Among the tropical islands should be reckoned Fernando Po, Prince's, St. Thomas, and Annabon, all in the Gulf of Guinea. Madagascar, in the Indian Ocean, is about 1,000 miles long, and about 250 miles of average breadth; it is reckoned to contain about 200 thousand square miles. The population is reckoned to be between 4 and 5 millions. Bourbon lies about 400 miles eastward of Madagascar contains about 900 square miles, and has a population of upwards of 100,000. Mauritius is about 115 miles north-east of Bourbon, contains about 676 square miles, and has a population of about 180,000. Attached to it in government are the Seychelle and Amirante Islands to the north of Madagascar, and Roderigue about 300 miles east of the Mauritius; and connected with these, also, are the Chagos Islands, upwards of 1,000 miles south of Cape Comorin in Hindostan. The Comoro islands are situated in the Mozambique Channel; and the Island of Socotra is situated about 130 miles east of Cape Guardafui, being about 80 miles long, and having a surface of nearly 1200 square miles.

The *capes, headlands,* and *promontories* of Africa form some of its most remarkable features. On the north, is Cape Ceuta (the ancient *Abyla*), a high promontory jutting out into the sea, and terminating in perpendicular rocks; this promontory lies directly opposite the rock of Gibraltar (the ancient *Calpe*), in the strait of Gibraltar; and these two rocky promontories, as has been formerly remarked, were denominated by the ancients the Pillars of Hercules. In the Mediterranean, eastward from these, are Cape Blanco, Cape Carthage, and Cape Bon; and westward and southward in the Atlantic, are Cape Spartel, Cape Cantin, Cape Nun, Cape Bojador, Cape Blanco, Cape Verde, Cape Roxo, Cape Sierra Leone, Cape Palmas, Cape Three Points, Cape Formosa, all north of the equator; south of this line, are Cape Lopez, Cape Negro, Cape Frio, and Cape Voltas; while doubling the Cape of Good Hope, are to be seen False Cape, Cape Lagullas, Cape Natal, and others in the colony of the Cape. Ascending the east coast, towards the equator, occur Cape Corrientes, Cape St. Sebastian, Cape Delgado, and a variety of other capes called by the common name of *Ras*, which signifies *head* (originally from the Hebrew), just as *cape* signifies *head*, from the Latin *caput*. In the Red Sea, the entrance to which is by the strait of Bab-el-mandeb, there are a variety of capes known by the same appellation, *Ras*, but they are too minute for a general view; and of the Isthmus of Suez, common to Africa and Asia, we have formerly had occasion to speak.

The *mountains* of Africa, as far as the interior is concerned, are scarcely known. In the northern part of this continent are the celebrated mountains, long known by the name of Atlas, and as having originated the name Atlantic still applied to the surrounding ocean. These mountains run through the Barbary states, and separate them from the Great Desert; they vary in elevation from 3,000 or 4,000 feet to 11,400 feet, the latter being among the highest points, and situated near the city of Morocco. Another range is the mountains of Abyssinia, of which the most elevated rise to the height of 15,000 feet above the level of the sea; these though within the tropics are covered with perpetual snow, and in these are found the sources of the Nile. In western Africa are to be found the Kong Mountains; and in eastern Africa, the mountains Kilimandjaro and Kenia, each of which is about 20,000 feet high, appear to be connected with vast interior mountain ranges, called the Jebel-el-Kumri, or Mountains of the Moon. Within

the limits of the Cape colony there is a range of mountains called the Nieuveldt, of which the highest are above 10,000 feet in elevation, and being also covered with perpetual snow, have received the name of Sneeu-berg or snowy. The Table Mountain, near the Cape itself, is 3,582 feet above the level of the sea.

The *table-lands*, *plains*, and *deserts*, in this continent are immense and unexplored, perhaps unexplorable! Sahara, or the Great Desert, is a vast plateau, varying in elevation from 1,000 to 2,000 feet in height, with valleys and oases (fertile tracts of land) intervening at distant intervals to relieve the general monotony and sterility. Its length is about 3,000 miles, and its breadth in some places exceeds a thousand miles; it stretches from the shores of the Atlantic to the hills which border the valley of the Nile on the west. Eastward of that river, and stretching to the shores of the Red Sea, are the Deserts of Egypt and Nubia, high plateaus traversed by ranges of mountains, in which are formed the torrent beds which create the annual inundations, and fertilize the valleys of those countries. In central Africa lies the great basin of Lake Tchad, several thousand square miles in surface, varying with the seasons, and receiving some small tributary streams. The principal *river* in Africa, is the celebrated Nile; it consists at first of two great arms called the Bahr-el-Azrek and the Bahr-el-Abiad, that is, the Blue Nile and the White Nile. The whole length by the former branch is about 2,600 miles, and of the latter, as far as hitherto explored, about 3,500 miles; below the junction of the Atbara above Berber, it has a course of 1,400 miles to the Mediterranean. On the west coast of Africa are the following rivers of considerable note, and no small value in this dreary continent: the Senegal of 900 miles, and the Gambia of 650 miles in extent; both water the district known by their united name; the Quorra (or Niger), about 2,300 miles in length, rising in Negritia, and falling into the Bight of Benin; the Orange River, in South Africa, of about 1,000 miles in length and various others of smaller extent; and the Zambesi, on the Eastern coast, of about 900 miles in length.

Of the different races of men which inhabit the continent of Africa, some were described in our last lesson, and we proceed now to complete the general view which we then commenced, taking in those races that belong to all the continents of the world.

3. *The Ethiopian Race.*—The characteristics of this race are, a black skin, or a brown one bordering on black; hair black, short, curled, and woolly; a narrow cranium, elongated from front to back; low forehead; projecting jaws, oblique teeth, thick lips, and retreating chin; and the facial angle varying from 70° to 75°. The type of this race is exhibited in all its exactitude among the Negroes or Blacks, properly so called, who, designated by the ancients by the common name of Ethiopians, inhabit Senegambia, Guinea, Soudan or Negroland, and Congo. Notwithstanding very considerable differences, the Hottentots and Caffres (Kafirs) are connected with the inhabitants of these regions, in so much that we may collect into this single group all the Negroes of Africa. To the Ethiopian race are also referred the Negroes of Oceanica, who are distinguished from the African race by the greater length of their hair and a less woolly beard, by the disproportion between their long and thin extremities and their short and squat body, and who, under the name of Papouas, are the native inhabitants of Australia, New Caledonia, Van Diemen's Land, New Guinea, &c., and who under other names are found mixed with other races in the islands of Sunda, the Philippines, and the Moluccas. A multiplicity of idioms without any apparent connection with each other, or with the languages of the other races, is the common characteristic of the language of the African and Oceanican Negroes. As a superior specimen of the Ethiopian race, we insert the head of a Negro belonging to Mozambique in Africa, fig. 4.

4. *The Malayan Race.*—At first all the natives of Oceanica were considered to belong to the same race. The distinguishing characteristics which belong to the Oceanic nations are not so marked but that they might have been ranked either under the Caucasian race or under the Mongolian race, according as they were found to have a resemblance either to the Indians or to the Chinese; and they might even have been ranked, on account of some affinities, with the Ethiopian race, if the Malayan race had not already been separated from the Negroes of Oceanica. Even after this separation, the common characteristics which have been assigned to the Malayan race possess no absolute distinction over the latter, but are marked only by shades of difference. These characteristics are the following: a brown skin; hair abundant, black, curled, and thick; a cranium rather narrow, low in front, and projecting behind; a large flat nose; jaws slightly inclined; lips rather thick; and the face slightly projecting from the cranium, without high cheek bones. The relationship which arises from language connects by a more direct tie those nations which speak the Malaya, and the dialects that are derived from it, or that possess kindred analogies with it. According to the affinities of this language, the Malayan race has been subdivided into 1°, the Indo-Malayan branch, comprehending the natives of the Malayan peninsula, and of the islands of Sumatra, Java, and Celebes, and of the Moluccas, the Philippines, and the Carolines; and 2°, the Polynesian branch comprehending the natives of the Friendly Isles, the Society Isles, and the Sandwich Isles; and 3°, into the Madagashy, comprehending the natives of Madagascar. As a specimen of the Malayan race, we insert the head of a native of Tahiti, see fig. 5.

5. *The American Race.*—To one and the same race, have been referred all the nations of America; for, although these nations, which are very considerable in number, exhibit great differences among themselves, yet the physical characteristics which are common to each have no peculiarities so striking as to justify their separation into different races. A coppery or brownish tincture of the skin; hair long and straight; a scarcity of beard; a prominent nose; a triangular visage arising from the size of the cheek-bones and the projection of the chin; elongation of the cranium; and depression of the occipital region or lowness in the back part of the head, are the most general, characteristics of the American race. It has been attempted to explain the origin of the American peoples by the emigration of the nations of the old continent; indeed, certain analogies in the form of their body and structure of their language, have led to the idea that the native Americans are connected with the peoples of the North of Europe and of Asia. These analogies are such, that the Greenlanders and the Esquimaux have been ranked among the Mongolian race as connected with the other members of the Finnish family; but the nature of the languages spoken by the American nations, which shews a relationship common to them all, precludes the notion that they are connected with any of the languages of the old continent, and induces the conclusion that all these nations are properly united under one and the same aboriginal race. The natural separation of the continent of America into two very distinct parts, has led to the subdivision of the American race, according to their location, into 1°, the North American nations, of which the chief are the Toultecs and the Aztecs, the ancient stock of the Mexican tribes; the Algonquins, the Iroquois, the Cherokees, the Sioux, the Columbians, and the Californians; and 2°, the South American nations, of which the chief are the Quichuas or Peruvians, the Araucaniens, the Patagonians, the Chiquitos, the Guaranis, and the Caribbees. As a specimen of the American race, we insert the head of a Patagonian, see fig. 6.

LESSONS IN ENGLISH.—No. XLV.

By JOHN R. BEARD, D.D.

THE ARTICLES.

THE word article, coming from the Latin artus, *a joint*, is in form a diminutive (articula), and according to its etymology or derivation signifies *a little joint*. The articles may have been called "little joints" because of their smallness as articulations, or because, being small, they, as limiting the application of nouns, are the points or pivots on which discourse turns.

The article *the* does not essentially differ from what is called the demonstrative pronoun *this*, for "the man" and "this man" are phrases of kindred import. Indeed, the appears to be an abbreviated form of *this* (from the Saxon, *thes*, as in these) being softened down from *this*, into *thic* (thic is still common among the peasantry of the south), and *thae* Scotch into *the*. In the Anglo-Saxon, the article *the* is connected in origin as well as signification with *this* and *that* (that).

The article *an* (*a* before a consonant) the same with the German

ein, the Greek *en*, the Latin *unus*, the French *un*, and the Scotch *ane* (*ae*), in all of which the *n* is a radical letter, denotes *unity*.

From these etymological statements we are led to the exact import of the articles. In English there are two articles. Of these the one, namely *the*, is called the definite article, the other, namely *an*, is called the indefinite article. The indefinite article points out one object, as *an apple*, *a man*, thus limiting the noun to a single object of its kind. Such a limitation at first sight seems very definite; but *an* or *a*, while it indicates *one*, leaves it uncertain, that is undetermined (or indefinite), what *one* is meant. The office of determining what object is meant belongs to the definite or determining article *the*, e. g. "I saw *a* man." "What man?" "*The* man whom you and I met yesterday."

A has the same origin as *one*. But *a* differs from *one*, "a man" and "one man" do not signify exactly the same. *A* man is one man as contrasted with *the* man, that is some particular man; and *one* man is *a* man as contrasted with *many* men. *A* simply indicates one of a class of objects, e. g., *a* book, *a* horse, *a* needle; *one* indicates a single object as the opposite of several. These statements may be illustrated in an example: "I bought *a* book." "Yes, but not *the* book you wanted." "I bought *one* book." "Indeed! I thought you had bought *many*." "No, I bought but *one*."

The differs from *this* as being less demonstrative without being less definite. *The* declares, *this* points out; *the* is the declaration of the tongue, *this* is the declaration of the finger. "I have sold *the* table." "*The* table! what table?" "*The* table you mentioned." "What! *this* table?" "Yes."

The undergoes no change by inflection, remaining the same whether the noun is singular or plural, masculine or feminine, the subject or the object.

An, for the sake of euphony, drops the *n* before a consonant, or consonantal sound; thus we say *an* empire and *a* kingdom.

By "a consonantal sound" I mean a sound which has more or less the force of a consonant. Thus *h* when aspirated as in *h*orse, is a consonantal sound. *U* (pronounced *you*) as in *u*niversity, is a consonantal sound. Consequently we say "*a* horse," "*a* university," as well as "*a* tiger," "*a* school." I give a list of

Words the initial letter of which has a consonantal sound.

A European,	A use,
A ewer,	A useful (instrument),
A uniform,	A usual (hour),
A union,	A usurer,
A unit,	A usurper,
A unitarian,	A utilitarian,
A united (company),	A utopian (theory),
A universal (custom),	A humorous (story),
A university,	A humour,
A usage,	A horseman

So we also say "such a one" and "a once beloved friend." *An* is required before what is called a silent *h*, that is *h* which is not aspirated; e. g.

An before words beginning with a silent h.

An heir,	An hour,
An herb?	An honest (man),
An honour,	An humble (friend),
An hospital?	An honourable (man),
An hostler,	An honorary (member)?

In regard to some of these words usage is not strict or uniform. In those that I have marked with a note of interrogation, the initial *h* is aspirated by some authorities; whose practice in this particular seems to be increasing in prevalence. When the *h* is aspirated, of course not the full form *an*, but the shortened form *a*, is required.

The adjectives formed from some nouns in which the *h* is aspirated, drop the aspirate and so take *an* instead of *a*; thus we say, "*a* history" but "*an* historical narrative;" "*a* heretic" but "*an* heretical book."

A common noun, when taken in its widest sense, admits no article; e. g.,

"The proper study of mankind is *man*"—*Pope*.

A noun is also without the article when it is used in a general sense, and in cases when the word *some* may be supplied, e. g.,

"To buy *food* are thy servants come."—*Genesis*.

A, may denote a class, and *the* may denote the particular class; e. g.

"*A* bird which I saw in America sang the sweetest of all the songs I have ever heard." "What bird?" "*The* yet unnamed species described in my new work."

A, though denoting a single object, may stand before a noun of multitude, provided the idea of unity predominates; thus we say "*a hundred* men," that is, "*a* band of a hundred men," a hundred men considered as a total. So "*a few* days" means a certain indefinite period. There is a difference between "few people" and "*a* few people;" "few people" says that the people in question were not numerous; "*a* few people" declares that there was present a company, in opposition to their being present no persons at all; e. g., "few people were at the play." "Few? None." "O, I beg your pardon, there was *a* few."

A, prefixed to the name of an eminent personage, denotes one of a class; thus, "*a* Nero" is a person as cruel as the emperor so called. *The*, is also used before such names in the plural number, e. g., "*The* Neros, thank God, are not numerous."

The is put before a noun in the singular, when a particular species is intended; e. g., "*The* horse is a noble animal." The meaning would be wholly changed by converting the singular noun into a plural one; e. g. "*The* horses are noble animals," that is, the horses in question.

A, the article, must not be confounded with *a*, the old proposition or particle, e. g.,

"They go *a* begging to a bankrupt's door."—*Dryden*.

Nor must *an*, the other form of *a*, be confounded with *an*, the old conjunction, e. g.,

Nay *an* thou'lt mouthe, I'll rant as well as thou.—*Shakspeare*.

In such phrases as "four miles *an* hour," "twenty leagues *a* day," a doubt has been expressed whether the *an* and the *a* are the article or the preposition. I incline to the opinion that *an*, *a*, in such cases is the article. This seems probable from the fact that *an*, not *a*, stands before a noun beginning with a vowel or an *h*, not pronounced; for the preposition *a* is invariable; e. g.,

"Every one cut off a piece and fell *a* eating."

The meaning of "four miles *an* hour" is not "four miles *an* or *in* hour," which has no sense, but four miles in *an* hour, that is, four miles in *one* hour, four miles *each* or *every* hour, the article being used distributively, as in the phrase "a guinea *a* head," that is, a guinea to *every* head or person.

The form "a many" is found in Shakspeare:

"A care-craz'd mother of *a many* children."

"A many" is still very common in the north of England in instances where it is now more usual to say "a great many." "Many a," as in

"Full *many a* gem of purest ray serene,"

is customary and good.

Some have denied to *an* and *the*, the honour of being a separate part of speech, alleging that the article is merely an adjective. Thus they say that in *the chair* and *mahogany chair*, the and mahogany perform the same functions, namely, they qualify chair. But the two words qualify chair with a difference, the one indicating what the chair is made of, the other denoting some particular chair of whatever material it may consist. Surely there is a material difference of meaning between these three forms of words: green chair, *a green* chair, *the green* chair. At least the article qualifies the qualifier as well as the object qualified, inasmuch as it tells us that *a single* green chair is meant, or *the particular* green chair in which some one sat. There is consequently solid ground for studying the article apart from the adjective, and if only for that purpose, there is a good reason for giving the article a specific name.

EXERCISES.—COMPLETE.

In an epic poem, or a poem upon an elevated subject, a writer ought to avoid raising a simile on a low image. In the ode which was composed on the Queen's marriage, the poet laureat employed the most suitable images that his imagination could supply.

"A Daniel come to judgment! Yea, a Daniel."—*Shakspeare*.

He who would write heroic poems should live an heroic life. An historical introduction has generally a happy effect to rouse attention. Those who contend for four per cent. have set men's mouths a watering for money.

"And when he thinks, good easy man, full surely
His greatness is a ripening—nips his root."—*Shakspeare*.

"He sent them to Lebanon, ten thousand a month, by courses." (1 Kings v. 14.)

"For harbour, harbour, at a thousand doors they knock'd;
Not one of all the thousand but was lock'd."—*Dryden.*

The praise of the judicious few is an ample compensation for the neglect of the illiterate many.

EXERCISES.—INCOMPLETE.

—English are rich,—Irish are poor.—Father and mother of this child are dead.—Sun moon, and stars are very beautiful. The spirit of man will sustain his infirmity.

Have you ever seen such—knife? Yes, I have seen such—one. —European differs in hue from an Asiatic. In London there is—University. Every family has—master; a ship has—master; when—house is built, there is—master; when—highways are repairing, there is—master. In the English language, the same sound and apparently—same word is employed both as—noun and as—verb; nay,—same word may be employed as—adjective and even as—preposition, and—adverb as well as—verb and—noun.

"The old oaken bucket,—iron bound bucket,
—moss covered bucket arose from the well."—*Wordsworth.*

PARSING.

The task of a schoolmaster laboriously prompting and urging an indolent class, is worse than his who drives lazy horses along a sandy road.

The, the definite article qualifying *task*.

Task, a common noun made to refer to a particular task by the use of the limiting or definite article *the*; *task* is a noun neuter, in the singular number; the subject to the verb *is*.

Of, a preposition forming with *schoolmaster*, the Norman French, or false Genitive.

A, from *an*, the indefinite article qualifying *schoolmaster*.

Laboriously, an adverb qualifying *prompting*.

Prompting, a present participle, known by its ending in *ing*, and agreeing with *schoolmaster*.

And, a conjunction, connecting together *prompting* and *urging*.

Urging, a present participle from the transitive verb *to urge*, agreeing with *schoolmaster*.

An, the indefinite article, which before a consonant becomes *a*.

Indolent, an adjective qualifying *class*; indolent is made up of two Latin terms, in, *not*, and doleo, *I am in pain*, so that indolence is *taking no pains*.

Is, a part of the verb *to be*, present time, having for its subject, *task*, or in full, "the task of a schoolmaster," &c.

Worse, an adjective qualifying *task*.

Than, an adverb of comparison.

His, a possessive pronoun, or the possessive case of the personal pronoun *he*; if regarded in the former light, his agrees with *task* understood; if in the latter, it is governed by *task* understood.

Who, a relative pronoun, the subject of the verb *drives*.

Drives, a transitive verb, present time, having for its subject or nominative case the pronoun *who*.

Lazy, an adjective qualifying *horses*.

Horses, a common noun, in the plural number, the object to the verb *drives*.

Along, a preposition, made up of *a* and *long*.

A, the indefinite article from *an*, employed before a singular noun beginning with a consonant.

Sandy, an adjective qualifying *road*.

Road, a common noun, of the neuter gender, singular number, dependent on the preposition *along*.

If viewed etymologically, the sentence yields these results. Of Saxon or Teutonic origin are these words, namely, *the, of, a, is, worse, than, he, who, drives, lazy, horses, along, sandy, road*; of Celtic origin is task (tasg, *a bond, a job*); and of Latin origin are *laboriously, prompting, urging, indolent. Schoolmaster* is a hybrid, being made up of the Greek skolé, *leisure, school*, and the Latin magister, *a master*. The student should ascertain the signification of the words of Latin origin from the lists already given of Latin stems.

Words with their proper Prepositions.

	F. R.
Eager in, for, after	L. acer, *sharp, vigorous*
Embark in, for	em, en French form of in, and bark, F. barque, *a boat*
Embellished with	em and bellus, *beautiful*, F. belle
Emerge from	L. emergo, *I dip up*
Employ in, on, about	F. employer, L. plica, *a fold*
Emulous of	L. aemulus, *a rival*
Enamoured of	en (em, in) amor, *love*
Encounter with	en (in, *against*) and contra, *against*
Encouragement to	F. coeur, L. cor *heart*
Encroach on	connected with our *crook*, in Welsh *crog*
Endeared to	en and dear
Endeavour after	en and devoir, F. *duty*
Endowed with	L. dos, dotis, a *gift, dower*
Endued with	L. induo, *I put on* or *in*
Engage in, with, for	F. engager, en and gage, *a pledge*

LESSONS IN PHONETIC SHORT-HAND.—No. VI.

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87. The ten common words *true, full, holy, strong, scripture, glory, speak, street, square, esquire*, though not belonging to the subordinate classes, may be represented in the same way—without full-sized characters, and by a simplification of the alphabetic form; and all derivatives from them, such as *truly, strongly, strengthen, scriptural*, &c., will be indicated by alphabetic additions to the radical symbol.

88. These words, too, may often be united into phraseological combinations, like the subordinate words.

true	⌐	t′r*	glory	∠	g
full	⌒	f l	speak	/	s*p
holy	⌐	h l	street	|	s*t
strong	⌐	s*tr*	square	↖	s*k
scripture	⌐	s*kr*	esquire	⌒	dot above s

89. EXERCISE.—Write the following derivative words by adding the letters in italics—written *as small as possible*—to the symbols of the radical words.

[NOTE.—The syllables within brackets are contracted affixes, for which see lesson IV.: the negative *in* or *un* is expressed by *crossing the end* of the contraction.]

Tru*ly*, truism*, *un*true, *un*tru*ly*; tru*th*, tru*ths**, truth*ful*—*ly* (dot), truthful[*ness*], truth[*less*]*ness*; *un*truth-s*, -*ful*,-*ly* (dot); fu*lly*, ful[*ness*]; holi*ly*, holi[*ness*], *un*holy; strong*ly*, stronger, strongest, strength, strengthen*, strengthening, strengthens*, strengthened, strengthener*; scriptures*, scriptural-*ly* (dot), *un*scriptural; glories*, glorious, *in*glorious, gloriously, glorying, glorifica[*tion*]; speaks*, speaker*, speaking, speakable-*ly* (dot), *un*speakable; spoke (dot before "speak"), spoken*, outspoken*; speech (s*psh), speeches*, speech[*less*], speech-[*less*|*ness*], speechify, speechifies*-er*-*ing*; streets*, squares*, squared, squaring, squarely, square[*ness*]; esquires*.

ABBREVIATED LOGOGRAMS, FOR REPORTING.

90. To fit a system of short-hand for verbatim reporting—that is, for being written as fast as a speaker pronounces,—many contractions must be made use of. The hand could not trace a line for every syllable with the rapidity of ordinary articulation. All words of very common occurrence or difficult outline, and phrases of regular construction that are frequently made use of, must be contracted in reporting, as prefixes, affixes, and subordinate words are, by this system, in ordinary notation.

91. Contractions, to be readily available, should be simple, suggestive, and as little arbitrary as possible; and they should be so distinctive in form that the reader may recognise them at a glance, and never confound them with fully written words. These qualities have been attained in the abbreviations given in our former lessons, by an almost uniform adherence to the *alphabet*, and by the principle of writing the subordinate words without full-sized characters, which not only distinguishes contracted from uncontracted words, but enables the writer to join the subordinate symbols in any

phraseological order that chance may present, without danger of any cluster being confounded with an uncontracted word.

92. We now introduce a principle by which reporting logograms may be simply constructed, and extensively used, with as much freedom from ambiguity as the contractions for subordinate words.

93. This system of shorthand not being written on a continuous line, and the characters having no variable value dependent on their position above, below, or upon any line, *ruling* is not necessary; the words, subordinate and principal, that is, contracted and fully written—fall into grammatical or accentual groups, which have a common line of commencement but not of termination. All the words that belong to one group should be written closely together, and a means of distinguishing logograms from other words will then be available, by throwing the LOGOGRAMS *below the general line of commencement, or apart from the other words of the group.*

94. The reporting logograms, like the subordinate words, are written *without full-sized characters*; and, as contracted letters can never, in this system, have vowels before them in ordinary notation, *a dot* prefixed to any such character will enable it to be used as the symbol of *two words*;—one being denoted by the letter alone, and the other by the letter with a dot before it.

95. On this principle the following table of *Alphabetic Logograms* is constructed.

96. As with the subordinate words, all *derivatives* may be indicated by very small *alphabetic additions to the radical symbol.* This short list will thus be found to represent a very considerable category of words—upwards of 500—so simple in their notation, and at the same time so distinctive, ttha they may be committed to memory, and brought into use, almost after a single reading. Let the learner supply the short-hand symbols. The ring letters are illustrated.

ALPHABETIC LOGOGRAMS.

b	bill	r	right
.b	bible	.r	royal
d	divine	r* (horizontal)	err
.d	educate	.r* (horizontal)	redeem
f	father	s	society
.f	future	.s	assist
g	God	sh	chapter
.g	gospel	.sh	motion
h	house	t	time
.h	heaven	t[*ment*]	testament
k	Christ	.t	eternity
.k	common	th (thin)	faith
l	lord	.th (thin)	author
.l	almighty	th (thick)	brother
m (ring to right)	man	.th (thick)	heathen
m (ring to left)	men	v	verse
.m	omnipotent	.v	event
n (ring to right)	know	w	wise / word
n (ring to left)	knew-new	.w	world
.n	honour	wh'	white
ng	king	.wh'	whim
ng, inverted [= k ring]	queen*	y*	unite
		.y	universe
.ng	language	z	use (noun or verb)
p	prince	.z	Israel
p[*ment*]	parliament	zh	Jesus
.p	people	.zh	measure

97. To these may be added the alphabetic *J*(dzh), with its "breath-correspondent" *ch* (tsh); the *ring*, the *negative cross*, the *dot*, and the *comma*.

j(dzh)	⌐	judge
.j	.⌐	Jehovah
ch (tsh)	⌐	church
.ch	.⌐	child
ring	◯	now
neg. cross	o	nay
dot	×	point
comma	'	points

98. EXERCISE.—Write the following words by *adding the letters in italics* to the radical symbols. The additions should be written *as small as possible.* The syllables within brackets are affixes. The negative *in*, *un*, or *im* is expressed by *crossing the end of the contraction.*

BILLS*; BIBLES*, bibli[*cal*]; DIVINES*, divine*d* (repeater), divin*ing*, divin*er**, divin*ely*, divina[*tion*], divin*ity* (dot); EDUCATES*,-*ed*,-*ing*,-*or*,-[*tion*],-[*tional*], *un*educate*d*; FATHERS*,-*ed*,-*ly*, *un*father*ly*; FUTURE*ity* (dot); GOD'*s*, god*ly*, god*like*, god*head*; GOSPEL'*s** ; HOUSES*,-*ed*,-*ing*,-*hold*,-*holder**, *un*housed; HEAVENS*,-*ly*, heaven*li*[*ness*], heaven[*ward*]: CHRIST'*s* ;-ian,-s*,-ize,-*ity* (dot); christen*dom**, *un*christian: COMMONS,-er*,-*ly*,-*alty*,-[ness],-*age* (*dzh*),-*law* (*l* dot),-*w'eal*,-*w'ealth*,-*pleas**,-*p'lace*,-*hill*,-*counc*il*; commune (*'k*, *n*), -s*, -ed (repeater),-*ing*,-ity (dot),-ion (repeater); ica*te*,-s*,-*ed*, (repeater)-*ing*;-ica*b'le*,-*ly* (dot) ;-icability; icative,-ly,-[*ness*]; ican't,-s*; *un*common, *in*communica*ble*: LORD-*s**,-*ly*; *king*,-s*; lorded,-*ing*; ALMIGHTY'*s** ; MAN'*s**,-*ly*,-*li*[*ness*],-*hood*,-*kin**d,-*kin**d'*s**,-*ful*,-*fully* (dot), *s**laughter**, manned, *un*manned, *un*manly, woman ("wu" *m*): MEN-*s**, *women* ("wu," *m*): OMNIPOTENT'*s** -*ly*; omnipotence (*'m s*), -*cy* (dot); omnipr*esent (*'m*, *r*n*),-*ence*; omniscient (*'m*, *s h*),-ence (*m*, *shs**); KNOWS*, -*ing*,-*n**, *un*known, know *not* (crossed); knew *not*; new*ly*,-*er**, -*est'*, -*ish*; news*, news*paper**-s*, news*m*onger; kn*ow-ledge; acknowledge (dot before *n*l*),-*s**,-*ed*,-*ing*, [*ment*] *unac-kn*owledged*; HONOURS*, -*ed*, -*ing*, -*ab'le*, -*ably* (dot), *ary* (dot); dishonour, -*ed*.-*ing*, -*able*, -*ab'ly*: *un*honoured; KINGS*, -*ly*, -*dom**-s*, *un*kingly: QUEENS*, -*ly*, *un*queen*ly*: LANGUAGES*, -*ed*; lingua*l* (*'ng*, *l*), linguis*t*: PRINCES*,-*ly* (dot),-*dom** ;-cess, -es* ; princip*al*-*ly* (dot), princip*ality*; princ*iple* (*p'*, *l*), -s*, *un*princ*ipled*, principi*a* (*p*, two dots), principi*a*[*tion*]; PARLIA-[*ments*] [*ary*]; PEOPLE'*s**, -ed; populous (*'p*, *s*), -*ly*, -[*ness*]; popular* (*'p*, *r**)-*ly*,-*ity*; populate (*'p*, *t*),-*ed* (repeater); popula[*tion*] (*'p*, [tion]) -*s**: *un*people, -*ed*; *de*populate (*d*, *'p*, *t*), -*ed*.-*ing*, -a[*tion*[; RIGHTS*,-*ly*;-*ful*,-*ly* (dot) ;-eous,-*ly*,-[*ness*], *un*righteous; ROYAL*ly* (dot); - *ty*; ERRS*, -*ing*,-*ed*; *error* (repeater), -*s**; erroneous, -*ly*, -[*ness*]; erran't, -*ry*; erra*tic*, erratic*ally* (r*, [*cal*] dot); errand, -*s**, REDEEMS-*ed*, -*ing*, -*ab'le*, -*er* (repeater), redemp[*tion*]: SOCIETIES* ; social*'le*; social, -*ity*; *un*socia[*b'ility*]; associat'e,-*s**,-*ed*; associa[*tion*], -*s**; *dissociate: ASSISTS*, -*ed*, -*ing*; -an't, -*s**;-an*ce,-es* ; *un*assisted: CHAPTERS* : MOTIONS*, -[*less*]; [*com*]motion,-s* : TIMES*,-*ed* (repeater),-*ly*; timous, *un*timely: eternal (*'t*,*l*),-*ly* (dot) : FAITHS*, faith[*ful*],-[*less*], *un*faith[*ful*] [*ness*] : AUTHORS* ;-ize,-*ed*,-*ing*,-a[*tion*] ; author*ity*,-ies*,-ativ'e,-*ly* (dot), -[*ness*]; authoress, -*ship*'; *un*authorized; authentic (*'th, k*), -i[*cal*]; at'e, -*ed* (repeater), a[*tion*]; authentic*ity*; BROTHERS*, -*ly*, -[less], -*hood*; brethren*; *un*brotherly; HEATHEN'*s** ; ish,-*ly* ; ize,-*ism* : VERSES*,-*ed* (t') ; us ;-atile,-ity (dot) ; *un*versed ; -ver[*sion*] ; versi*f'y*,-ies*,-ier*-ica[*tion*]; conversa[*tion*]; diverse,-*ity* (dot) ;-*if'y*,-ica[tion]; diver[sion]; *r**everse,-*s**,-*ed* (t') al; *tr**averse, [*l'r**ans]verse, obverse; EVENTS*;-ual,-*ly* (dot),-uate ;-[*ful*] : WISE*ly*,-*ling*,-acr*e, wisdom* (w, ring), -*ly*, *un*wise; WORDS*,-y,-i[*ness*]: WORLDS,-*ling*,-*ly*,-*li*[ness], *un*worldly, world*ly*-wise: WHITES, -*ed*,-*ing*,-*en**,-*ish*, -*ish*[ness],: WH'IMS*-*sey* (dot); si[*cal*], -*ly* (dot),-[ness]: UNITES*,-*ing*; -ed, -*ly*; union*-*s**; unity (dot)-ies*; unitar*ian (*y*, *r** (two dots) *n*),-*ism**; unanimous (*y*, *m*, *s*),-*ly*; unanim*ity* (dot); uni*form (*y*, *f'*),-*ly*,-*ity* (dot) ;-[*ness*]: UNIVERS-*ally* (dot)-*ality*-*ais**t*; ity (dot)-*ities** : USES*,-*ed*-*ing*;-*fully* (dot),-[*fulness*] ; [*less*],-*ly* (dot),-[*ness*];-*age* (*z*,*d h*),-s*; *an'e**e; usual (*z*, *l*), ly (dot);-*er**,-*ur**y* (dot),-*ur**er (repeater), -urious,-*ly*; utility (*z*,(dot))-*itarian* (*z*, *r**(two dots)*n*) *unusual-*in*utility: ISRAEL'*s**,-*ite*, *ites**, -*itish*: JESU'*s** : MEASURES*,

cd', -ing, -er*; ab'le, -ly (dot), [ness]; [less]; [ment], -s*-unmeasured', immeasur [able]: JUDGES*-ing, -ed'-er*; [ment]: s*; -ship'; judicativ'e (dzh, v') icatur*e (dzh, "yu" r*), -or*y (dot); judi[cial] (dzh [tial]) ly (dot); [scious]-ly, -[ness]; unjudged', injudi[cious]; adjudge, (d, repeater, zh)-s*, -ed; adjudicat'e; -ca[tion] (d, repeater, zh [tion]): JEHOVAH's*: CHURCHES*-ing, ed' (t'); -yar*d ("yu" r*d)-s*; -warden ("wu" r*d), -s*; man, -men, -woman, -women, (the symbols united): CHILD's; ish (repeater)-ly, -[ness]; -[less], -[like], -hood; -ren*, -s NOW (and) then (ring, th n): POINT-ed, -er, -ing*.

LESSONS IN GERMAN.—No. XLVI.

EXAMPLES ILLUSTRATING THE VARIOUS USES OF THE CONJUNCTIONS.

(*Continued from* p. 51, *vol.* III.)

Da.

Da du hier bist, will ich mit dir aus'gehen. — Since you are here, I will go out with you.

Da der Wind aus Westen kommt, wird es regnen. — As the wind comes from the west, it will rain.

Daher.

Die größte Wahr'scheinlichkeit der Erfül'lung läßt noch einen Zweifel zu; daher' ist das Gehoff'te, wenn es in der Wirk'lichkeit eintritt, je'derzeit überrasch'end. (Göthe.) — The greatest probability of (the) accomplishment (still) admits of (a) doubt: therefore it is, that hope when it becomes a reality, always surprises.

Damit.

Wärmen Sie schnell die Stube, damit' wir die nassen Kleider aus- und trock'ne an'ziehen können. — Warm the room immediately, that we may take off our (the) wet clothes, and put on dry (ones.)

Dann.

Erst bete, dann ar'beite. — First pray, then work

Darum, deßwegen, deßhalb.

Nichts nennt er sein, als seinen Rit'termantel; darum sieht er jedes Bie'dermanns Glück mit schelen Augen an. (Schiller.) — He calls nothing his, but a knight's cloak: he, therefore, (or on that account) looks upon every honest man's fortune with envy.

Das Wahre ist eine Fackel, aber eine un'geheure; deß'wegen suchen wir Alle nur blingend so daran' vorbei'zukommen. (Göthe.) — (The) truth is a torch, but an immense one: therefore, we all attempt, only blinking at it, to pass by.

Der Haß ist ein ac'tives Mißvergnügen, der Neid ein pas'sives; deßhalb darf man sich nicht wundern, wenn der Neid so schnell in Haß ü'bergeht. (Göthe.) — (The) hatred is an active displeasure, (the) envy a passive one; therefore, one must not be surprised, if (the) envy readily passes over into hatred.

Daß.

Es ist kein Zweifel mehr, daß er uns betro'gen hat. — There is no longer any doubt, that he has cheated us.

Demnach.

Wir sind schon fünf Stunden gegangen, und müssen demnach bald an der Stelle sein. — We have already walked five hours, and, accordingly, we must soon be at the place.

Denn.

Ich kann Ihnen nichts sagen, denn ich weiß kein Wort davon'. — I cannot tell you anything, for I do not know a word about it.

Wie kann Jemand in Eines Starken Haus gehen, und ihm seinen Hausrath rauben, es sei denn, daß er zuvor den Starken binde, und alsdann' ihm sein Haus berau'be? — How can one enter into a strong man's house, and spoil his goods, except he first bind the strong man? and then he will spoil his house.

Ich schätze ihn höher als Feldherr, denn als Staatsmann. — I estimate him higher as a general, than as a statesman.

Dennoch, dessenungeachtet, nichtsdestoweniger.

Philipp der Gü'tige war zu sehr Verschwen'der, um Schätze zu sammeln; dennoch fand Karl der Kühne in seiner Verlas'senschaft an Ta'felgeschirren, Juwe'len, Büchern, Tape'ten und Leinwand einen grö'ßeren Vorrath auf'gehäuft, als drei reiche Für'stenthümer damals zusam'men besa'ßen. (Schiller.) — Phillip the Kind, was too great a prodigal to gather treasures, nevertheless, Charles the Bold found in his inheritance a greater store of table-service, jewels, books, carpets and linen, hoarded up, than three principalities together, possessed at that time.

Christ'ian der Vierte hatte sich in dem Vertrage von Kopenha'gen verbind'lich gemacht', ohne Zu'ziehung Schwedens keinen ein'seitigen Frieden mit dem Kaiser zu schließen, dessenungeachtet wurde der Antrag, den Wal'lenstein ihm that, mit Bereit'willigkeit an'genommen. (Schiller.) — Christian the IV. had obliged himself in the treaty of Copenhagen, not to conclude a partial peace with the emperor, without the advice of Sweden; nevertheless, the offer which Wallenstein made him, was accepted with the greatest readiness.

Doch verspreche er ihnen auf das Hei'ligste, daß diese Last sie nicht über vier Mo'nate mehr drücken solle; nichtsdestowe'niger blieben diese Truppen statt dieser vier Mo'nate, noch achtzehn im Lande. (Schiller.) — Although he promised them, in the most sacred manner, that this burden should not oppress them more than four months; nevertheless, these troops remained in the land eighteen months instead of four.

Doch.

Er hat mich zwar oft belei'digt, doch kann ich ihm nicht böse sein. — It is true, he has often offended me, yet I can not be angry with him.

Ehe.

Ehe ich nach Hause gehe, werde ich zu Ihnen kommen. — I shall come to you before I go home.

Endlich.

Nachdem ich lange gewar'tet hatte, kam er endlich. — After I had waited for a long time, he came at last.

Entweder-oder.

Die Ue'brigen waren entwe'der bei dem geu'sischen Aufstande mit den Waffen in der Hand gefan'gen, oder wegen ihres e'hemaligen Antheils an der Bittschrifft des Adels, als Hoch'verräther ein'gezogen und verur'theilt worden. (Schiller.) — The remainder were either taken prisoners with their arms in their hands in the insurrection of the Geus, or arrested and sentenced for high-treason in consequence of their former participation in the petition of the nobility.

Falls.

Falls es regnen sollte, komme ich nicht. — In case it should rain, I shall not come.

Erst; dann, ferner; endlich, zuletzt.

Erst kamen drei Reiter, dann (ferner) folgte ein sin'gender Chor, und zuletzt (endlich) auf vergol'detem Wagen die Braut und die Gäste. — First came three horsemen, then (farther) followed a singing choir, and at last (finally) the bride and the guests in (a) gilded carriage.

Folglich.

Er ist mein Vater, folglich habe ich ein Recht auf seine Liebe und sein Vermö'gen — He is my father, consequently I have a right to his love and his fortune.

Gleichwohl.

Wir gingen vo'rige Nächt erst nach zwölf Uhr zu Bett; gleichwohl waren wir morgens um sechs Uhr wieder auf. — We did not go to bed last night till after twelve o'clock; nevertheless, we were up again at six o'clock this morning.

Je–desto.

Vergeſſen Sie nicht Ihr Verſprech'en zu erfüll'len; je eher desto beſſer. — Do not forget to fulfil your promise: the sooner, the better.

Ich erwar'tete Ihren Sohn nicht, aber desto größer war auch mein Vergnügen, als er kam. — I did not expect your son, but my pleasure was so much the greater as he came.

Jedoch.

Ich habe ihn gebe'ten zu mir zu kommen, er hat es jedoch' nicht gethan'. — I requested him to come to me, he, however, has not done so.

Je nachdem.

Sie werden belohnt' werden, je nachdem' Sie fleißig ſind. — You shall be rewarded, according as you are industrious.

Nämlich.

Alle ſeine Verwand'ten beſuch'ten ihn, nämlich: ſein Vater, zwei Schweſtern, der Onkel und eine alte Tante. — All his relatives visited him; namely, his father, two sisters, his uncle and an aged aunt.

Nicht nur, nicht allein, nicht blos, — ſondern auch

Er hat ihm nicht nur ſein Geld verſpro'chen, ſondern auch ge'geben. — He has not only promised him his money, but also given it.

Man hat nicht nur den König, ſondern auch die Kö'nigin und den Prinz erwar'tet. — They had expected not only the king, but also the queen and the prince.

Der Vater hat ſeinen Sohn nicht nur gewarnt', ſondern auch geſtraft', als die Warnung nichts fruch'tete. — The father not only warned his son, but also punished him, as the warning availed nothing.

Ob.

Ich habe ihm gera'then, es nicht zu thun; ob er aber meinen Rath befol'gen wird, iſt zu bezwei'feln. — I have advised him not to do it; whether he will follow my advice, however, is doubtful (to be doubted.)

So.

Wie der Vater, ſo der Sohn. — As the father, so the son.

Hätte mein Vater für mich geſorgt', ſo wie ich für dich ſorge, ſo wäre ich was An'deres gewor'den, als ein Wirth. — Had my father assisted me as I do you, I should have become something better, than an innkeeper.

Sonſt.

Ein Wunder mußte geſche'hen, ſonſt fand ſie nicht einmal den Weg zu Euch. (Schiller.) — A miracle must have happened, else she had not so much as found the way to you.

Wer keine Liebe fühlt, muß ſchmeicheln lernen, ſonſt kommt er nicht aus. (Göthe.) — He who feels no love must learn to flatter, otherwise he does not succeed ("*get*" along.)

Sowohl–als, or als auch.

Aber ſowohl' die Lage, als die Befeſtigung der Stadt ſchienen jedem Angriffe Trotz zu bieten. (Schiller.) — But the situation, as well as the fortification of the town seemed to bid defiance to every attack.

Um ſo, um ſo viel.

Du haſt es nicht gethan', und das iſt mir um ſo lieber. — Thou hast not done it, and that is so much the more agreeable to me.

Ueberdies.

Er ließ in aller Eile die Feſtungswerke ſeiner Reſidenz' aus'beſſern, verſah' ſie mit Allem, was ſie fähig machte, eine lange Bela'gerung aus'zuhalten, und nahm noch überdies zwei tauſend Spanier in ſeine Mauern auf. (Schiller.) — He caused the fortifications of the capital to be repaired in the greatest haste, furnished it with all that enabled it to stand a long siege, and besides took two thousand Spaniards within its walls.

Vielmehr.

Man mag nicht mit Jedem leben, und ſo kann man auch nicht für Jeden leben wer das recht einſieht, wird ſeine Freunde höchlich zu ſchätzen wiſſen, und ſeine Feinde nicht haſſen, noch verfol'gen; vielmehr' erlangt' der Menſch leicht einen gröſseren Vortheil, wenn er die Vor'züge ſeiner Wi'derſacher gewahr' werden kann. — One cannot live with every one, neither can one live for every one; he who rightly perceives this will highly appreciate his friends, and neither hate, nor persecute his enemies: much rather do men obtain with facility a greater advantage, when aware of the superior qualities of their adversaries.

Weder–noch

Weder verleiten will ich Euch zu einem falſchen Schritte, noch von einem falſchen zurück'halten. (Göthe.) — Neither will I persuade you to a false step, nor keep back from a false one.

Weil.

Ich will nichts mit dieſem Menſchen zu thun haben, weil er ein Böſewicht iſt. — I will have nothing to do with this man, because he is a villain.

Wenn, wenn nicht.

Ich würde mit Vergnü'gen zu Dir kommen, wenn ich hoffen könnte, Dich zu Hauſe an'zutreffen. — I would come to you with pleasure, if I could hope to find you at home.

Ich kann es nicht thun, wenn Sie mir nicht helfen. — I cannot do it, if you do not help me.

Wie.

Wie die Arbeit, ſo der Lohn. — As the work, so the reward.

Was haſt du wie meine Sonne, wie meinen Himmel, wie meine Fluren, wie mein geſchäf'tiges, raſt'loſes Leben? (Herder.) — What hast thou like my sun, like my sky, like my meadows, like my busy, restless life?

Exercises in Speaking and Writing German.

The manner in which the words in the following lists are to be used for the purpose of exercising the student in speaking and writing German is as follows. The student selects some particular word, say, der Schneider, and endeavours to produce in German a sentence contructed according to the principles embraced in any given LESSON. Thus (SECTION XI.) Ihr Freund der Schneider, hat das ſchöne neue Tuch des, &c.; or, der Schneider geht, &c.; der Schneider macht, &c.; or, Iſt der Schneider noch? &c. As the student advances, he may incorporate *two*, *three*, *four* or any given number of these words in an exercise. As a model for an exercise containing several different terms, something like the following (SECTION XVI.) may be given: 1. Gute Enkel ſind die Freude des Großvaters und der Großmutter. 2. Den guten Vorſätzen folgen gute Thaten. 3. Meine ſchönen Blumen blühen. 4. Dieſe rothen Roſen riechen. 5. Er hat zwei große Schränke, drei Kiſten und ſechs Kübel. 6. In dem Saale der Fürſten ſind viele Kronenleuchter, Lampen, und Kerzen. 7. Dieſe kleinen runden Hütten ſind ſchön. 8. Gute, treue und wahre Freunde ſind ein großes Geſchenk eines guten und gütigen Gottes. 9. Die Eichen und Buchen ſind hohe und dicke Bäume.

Exercise after section XXVI.

1. Die Kinder gehen in den Garten, um Roſen, Nelken und Lilien zu brechen. 2. Die Eulen und Fledermäuſe können das Licht der Sonne nicht leiden. 3. Aufmerkſamme Schüler können leicht die deutſche Sprache lernen. 4. Kennen Sie jene Zimmerleute und Maurer? 5. Ja, ſie haben von meinem Vater Korn, Weizen und Gerſte gekauft. 6. Man ſagt, das Tabak, Mais und Reis in Nord-Amerika gut gedeihen. 7. Jener Wundarzt weiß zu leben und ſich das Leben angenehm zu machen. 8. Ein geſchickter Arzt kennt die Theile des menſchlichen Körpers. 9. Der Rückgrat, die Rippen, die Schultern und viele andere Theile ſind von Knochen, und die Zunge, die Lunge, das Herz, die Leber u. ſ. w. von Fleiſch.

Besides the stock of words the student has already acquired and oth rs which he may acquire from the following lists, a Dictionary may also be made available. The following connected view of the different declensions of the adjectives and nouns will be found convenient for ready reference.

(The lists here referred to will be given in our next Lesson.)

TERMINATIONS OF ADJECTIVES.

	Old Declension (§ 28. 29.)				*New Declension* (§ 30. 31.)				*Mixed Declension* (§ 32. 33.)			
	SINGULAR.			PLURAL *all genders.*	SINGULAR.			PLURAL. *all genders.*	SINGULAR.			PLURAL *all genders.*
	Masculine.	*Feminine.*	*Neuter.*		*Masculine.*	*Feminine.*	*Neuter.*		*Masculine.*	*Feminine.*	*Neuter.*	
N.	– er	– e	– es	– e	– e	– e	– e	– en	– er	– e	– es	– en
G.	– es	– er	– es	– er	– en	– en	– en	– en	– en	– en	– en	– en
D.	– em	– er	– em	– en	– en	– en	– en	– en	– en	– en	– en	– en
A.	– en	– e	– es	– e	– en	– e	– e	– en	– en	– e	– es	– en

TERMINATIONS OF NOUNS.

	Old Declension.					*New Declension.*	
	Singular.	*Plural.*		(SECTION XVI.)		*Singular.*	*Plural.*
		1. R. II. IV.	2 R. IX.	3R. IV.	4. R. VII. VIII.		5. R. V. VI.
N.	—	— e	—	— er	— en, — n	—	— en, — n
G.	— es, s	— e	—	— er	— en, — n	— en, — n	— en, — n
D.	— e	— en	— n	— ern	— en, — n	— en, — n	— en, — n
A.	—	— e	—	— er	— en, — n	— en, — n	— en, — n

LESSONS IN NATURAL HISTORY.—No. XVIII.

(ORDER, *Carnivora.*)

THE ZORILLA—THE POLE-CAT—THE FERRET—THE STOAT.

THE *Zorilla* is a native of Africa. It excavates in the ground a burrow or hole for its dwelling-place, the claws of its fore-feet being very powerful, and well adapted for this purpose. The hair on its head is short and smooth, but on other parts of the body it is long, coarse, harsh, and moderately thick. An irregular mixture of black and white longitudinal stripes appears on the back; the head is black, with a white oval mark on the forehead, and a white mark occupies the space between the eyes and the ears. The under surface and limbs are wholly black. The diversity which takes place in the arrangement of the stripes among individuals all called zorilla, has led to the supposition that there are several distinct species of these animals, which, though closely allied, differ amongst each other in minor particulars. A strong resemblance in habits and manners, however, runs through the various members of this group.

The tail of the Cape zorilla, which is furnished with long hairs, is carried erect, and the hair so spread as to form a plume. In this respect, as well as in the style of colouring, it approximates to a race peculiarly American, which is remarkable for its overpowering odour. This when present in other

THE ZORILLA.

creatures of the genus, is neither so offensive nor so lasting as in the species just mentioned.

That such a peculiarity should be noticed in the zorilla, will not excite surprise when the animal is known to be an African *pole-cat*. The English kind, often called the foumart, is from seventeen to eighteen inches in length, measuring from the point of the nose to the insertion of the tail. The tail is short and bushy, and about three inches in length; the ears are

short, round, and tipped with white; the usual colour is a deep chocolate, sometimes nearly approaching to black; the sides are covered with hair of two colours, the tips being dark like the rest of the body, and the middle of a tawny hue.

The only way in which the pole-cat can make rapid progress is by a succession of leaps, but, owing to the shortness of its legs, when walking, the belly appears almost to touch the ground. In preparing to leap it arches its back, and then makes a forcible spring. It can creep up the side of a wall with great agility.

This animal chooses as its retreat woods or thick brakes, where it burrows underground to the length of from two to three yards, and then generally forms a round chamber among the roots of the trees. It seldom leaves its hole during the day, but as the shades of evening come on, it rouses from its repose, begins to prowl abroad, and proves as mischievous as a fox. Its ravages are sometimes greater than those of that destructive animal, whole broods of chickens being often killed during a single night, and their bodies left on the spot. Its voracity extends also to the old fowls, ducks, geese, and even turkeys; nd not content with killing one and making a meal, it sacrifices all within its reach. Mr. Bell mentions an instance in which sixteen large turkeys were killed by a pole-cat in the course of one night; and another in which ten ducks were destroyed in the same space of time, and in the morning, when the door of the outhouse in which they had been shut was opened, the perpetrator of the outrage marched out, licking his bloody jaws, without the slightest sign of alarm.

The pole-cat will moreover, become a fisher. Bewick mentions that during a severe storm, one of these animals was traced in the snow from the side of a rivulet to its hole at some distance from the stream. As it was observed to have made frequent trips, and as other marks were to be seen in the snow which could not easily be accounted for, its hole was examined, the foumart was taken, and eleven fine eels were discovered to be the produce of its nocturnal exertions. The marks on the snow proved to be made by the motions of the eels while in the mouth of their enemy. This is by no means a solitary instance. On another occasion, the nest of a female pole-cat was opened, containing five young ones; while in a side hole were packed forty large frogs and two toads, scarcely alive, each having been paralyzed by a bite through the brain. The fur of the pole-cat, generally called *Fitch*, is imported very extensively from the north of Europe, and is plentiful in the furriers' shops in the metropolis. *Fitchat* and *Fitchew* are names for this animal found in Shakspeare.

Closely allied to the pole-cat is the *Ferret*, a somewhat smaller animal. The general resemblance between the two creatures is strong, except that the ferret has a yellowish fur, and its eyes are red. It is a native of Africa, and has been employed in various countries of Europe to reduce the number of rabbits.

To these animals, the ferret has an instinctive antipathy. It is said that if a dead rabbit be presented to a young ferret, which has never seen one before, it will seize the carcase; and if a live rabbit be set before it, still greater marks of antipathy are shown: for it lays hold of the rabbit's neck, winds itself round it, and refuses to quit its gripe until it is completely satiated with the blood of its prey. When ferrets are used to drive rabbits from their burrows, they are muzzled, otherwise they would gorge themselves with blood, and then fall asleep. In some instances, they have got rid of the muzzle and were then only to be removed from the hole by digging for them, or smoking them out. Both these methods have even been resorted to without effect: the ferret has made good his retreat during the summer, preying on the rabbits; but when the winter sets in, ferrets either perish from cold, or leaving the burrow, are easily taken.

The *Stoat* is found in Europe and Asia, and, it is believed, in America. It closely resembles the weasel, but it is a full third larger. It has one marked peculiarity, in a change of dress. In the summer, its general colour is a pale reddish brown; but this, as winter advances, gradually changes to a pure white, which becomes universal, except at the tip of the tail, where it is, at all times, black. In its winter livery, its fur, called *Ermine*, becomes a valuable article of commerce. In England the stoat seldom assumes such a pure whiteness or such closeness of fur, as in Norway or Siberia—a special adaptation of the beneficent Creator to protect the animal from the intense cold of those regions. Ermine is imported in large quantities from the north of Europe. The skins are sold in the districts where they are caught, at from two to three pounds sterling the hundred.

The habits of the stoat are precisely the same as those of the weasel; but while it does not disdain a water-rat, it preys habitually on hares, leverets, and other game. It hunts its prey by the scent. In the retreat of one stoat there were found two leverets, two leveret's heads, two young partridges, and a pheasant's egg—a sufficient proof of its carnivorous voracity; but beyond these, there were the heads of two other leverets, and at the extremity of the hole, was the little maurauder dead. It might be supposed that such an accumulation of plunder indicated a provident disposition; but many naturalists are of opinion that stoats seldom devour any of their prey until it begins to putrify—in this respect, being like some human beings who have contracted such a depraved taste, as to be fond of *high game*.

The *Martens* may close our present article on creatures of this class. The *beech-marten*, distinguished by a white breast, is the more common in this country. The *pine-marten*, also found in this island, has by a yellow breast and throat. This animal lives like a squirrel among the trees in the forests of the north, both of Europe and America, climbing them with the utmost facility. It is said to have a cuckoo-like propensity, usurping the nest of a squirrel or a bird, the original tenant becoming a sacrifice to the marten's rapacity. The general colour of the fur, which consists, as is usual, of two sorts of hair is a deep chestnut, except on the throat and margin of the ears, where this colour gives place abruptly to a fine yellow. In summer, the tints not only become lighter, but the fur shorter; and the toes, which during the winter were well protected with woolly hair, are deprived of their covering, and the claws are entirely exposed.

LESSONS IN LATIN.—No. I.

By JOHN R. BEARD, D.D.

GOVERNMENT BY VERBS.

A VERB may govern a noun, e. g.,

Amo filium.
I love a son.

Here the noun filium is dependent on the verb amo; by the force of the verb amo filius, the nominative form, is changed into filium, the accusative form, or the form of the object.

With the noun, one pronoun or more may be connected; also one adjective or more; in which case the pronoun and the adjective will be in the same gender, number, and case as the noun, presenting an instance of concord or agreement, e. g.,

Amo filium meum minorem natu.
I love my younger son.

Instead of a noun, the object of a verb may be a pronoun, e. g.,

Amo te.
I love thee.

All verbs do not govern nouns. In general, the verbs which govern nouns are transitive verbs in the active voice. Intransitive verbs, inasmuch as their action does not pass over to an object, do not govern nouns.

In the examples just given, the nouns, &c., are in the accusative case. Verbs govern nouns in other cases. The noun, when governed by a verb, is said to be the object of the verb. The object of a verb may be a noun, a noun and adjective or participle, or a pronoun. The object of a verb thus explained may be in either of these cases, namely, the genitive, the dative, the accusative, the ablative. Here you see in the Latin a great divergence from the English, in which the object is always in the accusative or the objective (so called from its being the case of the object) case. I subjoin instances of each of these governments:—

VERBS WITH THEIR GOVERNMENTS.

1. The object in the Genitive: Miserere mei.
Pity me.

ii. " Dative: Medetur *oculis.*
He cures the eyes.
iii. " Accusative: Docet *pueros.*
He teaches boys.
iv. " Ablative: Fungitur *munere.*
He performs (his) duty.

Some verbs have in the same sentence two governments, e. g.,

Docet *pueros musicam.*
He teaches the boys music.

A verb may also have two objects in unlike cases, e. g.,

Dat librum puero.
He gives a book to the boy.

Both librum and puero depend on dat, and, consequently, dat is said to govern them. The general rule may be given in these terms,—

Transitive verbs in the active voice have two governments, the near and the remote; the near is the accusative, the remote is the dative.

The same verb may govern two different cases, e. g.,

Sapiens eget nullâ *re.*
The wise man wants nothing.
Aegrotus eget medicinae.
The sick man wants medicine.

The verb eget takes in one sentence, the ablative; in another, the genitive. These diversities of form generally involve some diversity of signification. Egeo signifies *to be without, not to have*; also *to need, to require.* In the first sense egeo takes an ablative, the ancient wise man could be without nothing, for he possessed all things inasmuch as he wanted (wished for) nothing. The sick man, on the contrary, has occasion for medicine, inasmuch as he is sick.

The two meanings are so much alike that they are sometimes exchanged the one for the other; thus we find medicinâ in the ablative; and the genitive is employed when the ablative might have been expected.

Having given a general view of the government of verbs, I shall take up each case in succession; and first,

VERBS WHICH GOVERN THE GENITIVE.

Verbs which denote an active or quiescent state of the feelings require their object to be in the genitive case; such as misereor, miseresco, e. g.,

Eorum misereri oportet.
It is proper to pity them.

Instead of a verb, you may have an adjective with est, e. g.,

Est *patiens* laboris.
He is enduring of (he endures) labour.

Certain impersonal verbs take a genitive together with an accusative for their object, e. g.,

Piget *me stultitiae.*
I am ashamed of my folly.

This, literally rendered, is, *it shames me of my folly*, showing a compound object to the verb piget.

A neuter pronoun, corresponding in relation with the noun in the genitive, stands in the accusative, e. g.,

Id ne pudet te?
Art thou not ashamed of that?

Verbs which signify to remember and to forget, also to remind and to admonish, take their object in the genitive. Such words are memini, *I remember*; reminiscor, *I call to mind*; recorder, *I recollect*; obliviscor, *I forget*; moneo, *I put thee in mind*; admoneo, *I admonish*; commoneo, *I advise*; commonefacio, *I warn*, e. g.,

Animus *meminit praeteritorum.*
The mind remembers past things.

Similar in construction is the phrase venit mihi in mentem alicujus rei, literally, *it comes to me into the mind of something*, that is, *something occurs to me, is suggested to me.* We also read venit res in mentem, *the thing comes to my mind.*

With verbs of remembering and forgetting, the accusative is found instead of the genitive, e. g.,

Cinnam memini, Sullam vidi.
I remember Cinna, I saw Sylla.

This is specially the case if the object is a pronoun in the neuter gender. Recorder, *I call to mind*, requires an accusative. Recordor may also have after it the preposition de, with its case.

Instead of the simple verb, we may have its equivalent in an adjective, and the copula est. Thus, instead of *he forgets*, we may say, *he is forgetful.* Consequently, a number of adjectives denoting states of mind are followed by the genitive, e. g., prudens (for providens), *foreseeing, prudent*; gnarus, *knowing*; peritus, *skilful*; conscius (*knowing with*), *conscious, aware of*; rudis, *destitute of, untrained*; memor, *mindful.*

Here we may place the phrase certiorem facere, *to inform*, which has a genitive object, e. g.,

Certiorem me fecit tui *consilii.*
He informed me of thy plan.

Some adjectives are denominated verbal, inasmuch as they are derived from verbs, and have a verbal meaning, thus edax from edo, *I eat*, signifies eating. Verbal adjectives in ax, as, capax, edax, ferax, rapax, tenax, govern a genitive case; as, tenax propositi, *firm to (his) purpose.* Certain participles, also, when used as adjectives, take a genitive, e. g., amans patriae; appetens gloriae; diligens veritatis; metuens futuri; sitiens sanguinis. The participle differs from the adjective in this, that while the participle denotes a single act, the adjective denotes an habitual state. When, then, these participles are used as participles, they require the government of the verbs to which they belong. Sitiens, employed as an adjective, has a genitive; but when used as a participle, it governs an accusative like its verb; as,

Tiberius sitiens *sanguinem*, Sejanum interfici jussit;
Tiberius, thirsting for blood, commanded Sejanus to be put to death.

Verbs which denote fulness, abundance, or want, take their object in the genitive case. Adjectives of similar import govern a genitive case, e. g.,

Adolescentem suae *temeritatis* implet.
He fills the youth with his own rashness.

This is an instance of a verb with a double object, an accusative of the person, and a genitive of the thing.

The verb potiri, *to make yourself master of*, takes the genitive in the phrase rerum potiri, *to seize the helm of government, to obtain power over*; though generally potiri requires the ablative.

Adjectives, too, denoting such a state of mind as is implied in having power, possessing ability, or the reverse, take a genitive after them. Hence arises combinations which the student may be glad to see translated, e. g., virtutis compos, *endued with virtue*; mentis impos, *weak of (in) mind*; sui potens, *master of himself*; exsors culpae, *free from blame*; rationis particeps, *sharing in the possession of reason*; rationis expers (ex and pars), *having no part, no share*, that is, *devoid of reason.*

The adjective proprius, denoting that which belongs or is peculiar to a person, takes a noun after it in the genitive case, e. g.,

Viri propria est fortitudo.
Courage is a property of man.

So proprium in the neuter is employed to designate the special property of an object, e. g.,

Id est vitium *senectutis proprium.*
This is the special fault of old age.

By an elipsis of proprius you may explain what is commonly called the genitive of possession or quality, e. g.,

Hic liber *fratris* mei est.
This book is my brother's.

Virorum fortium est dolorem pati.
To bear grief is the part of brave men.
Vir est *summae pietatis.*
He is a man of the greatest piety.

The quality is sometimes put in the ablative, e. g.,

Aristoteles vir erat *summo ingenio.*
Aristoteles was a man of the greatest ability.

Allied with the usage of proprium is the phrase nostrum est, vestrum est, meum est, &c., e. g.,

Nostrum est parentes amare.
It is our duty to love our parents.

From the idea of partaking or sharing in anything seems to have arisen the use of the genitive with the adjectives reus,

accused of; manifestus, *proved guilty* (Scotch, *proven*); noxius, *criminal, liable to punishment*; compertus, *detected*, e. g.,

Manifestus est *rerum capitalium.*
He was clearly convicted of a capital crime.

And hence is explained the genitive used with verbs, which signify to accuse, acquit, condemn. With such verbs, the crime is in the genitive, and the person accused or acquitted is in the accusative, e. g.,

Ne quis ante *actarum rerum* accusaretur.
Let no one be accused of former deeds.

In such cases it may be supposed that causâ, *on account of*, was originally employed, and is now understood, as the grammatical phrase is; if so, then this is an example of elliptical construction. Many peculiarities in all languages have arisen from ellipsis, or the omission of a word or words.

The penalty to which a convicted person was condemned may be in the genitive or in the ablative, e. g.,

1. Genitive:—Damnavit eos *capitis.*
He condemned them to death.
2. Ablative:—Damnavit hostem tertiâ parte agri.
He condemned the enemy (to lose) the third part, &c.

As the penalty, so the price is put in the genitive or the ablative. If the exact sum paid for an object is stated, it must be in the ablative case. If any indefinite word is employed, that word is put in the genitive, e. g.,

Quanti emisti librum? *centum assibus.*
For how much did you buy the book? a hundred asses.

In a similar manner the genitive is used after verbs which denote to value, esteem, or regard, e. g.,

Divitiae a sapienti viro *minimi* putantur.
Riches are little thought of by a wise man.

This genitive bears the name of the genitive of price. In agreement with it stand several neuter adjectives, used substantively, in the genitive case, e, g., magni, *at a great price*, or *greatly*; pluris, *more*, *for more*; maximi, *at a very great price*, *very dear*; so plurimi; also parvi, minoris, minimi; quanti? *how much?* tanti, *so much*; *so much as*, tanti quanti; tantidem, *for the same sum*; quantivis, *for whatever you please*; nihili, *of no value*; flocci (floccus, *a lock of wool*), as in flocci faeere, *not to care a straw for*; nauci (naucum, *a trifle*), as in homo non nauci, *a worthless fellow*; pili (pilus, *a hair*), as in non facit pili cohortem, *he does not value the cohort a bit*; pensi (pensum, *a task*), as in pensi habere, *to care for*; assis (ass, *a small Roman coin*), as in non assis facere, *not to care a farthing for.*

Nearly connected with the genitive of price is the use of the genitive with interest and refert,

Hoc vehementer *interest Reipublicae.*
This greatly concerns the Commonwealth.

Refert is made up of the ablative re and fert; hence arises the genitive, e. g., illorum re fert, *it bears on the concern of them*, that is, *it concerns them.* And so we are enabled to explain the fact that the possessive pronouns (mea, tua, sua, nostra) are with refert employed in the ablative case; thus, re meâ fert; re tuâ fert, &c. These phrases, however, appear without the re, or, rather, the re appears as a part of the verb. Taking the forms as they actually appear, e. g., refert nostrâ, refert vestrâ, &c., we must construe the possessives as if they were personal pronouns; accordingly, refert meâ must be rendered *it concerns me.*

Vocabulary.

Religio, onis, f. *religion*, in the plural, *religious observances, rites*; verecundia, ae, f. *modesty, respect*; praeteritus (praeter and eo), a, um, *past*; opera, ae, f. *labour*; est operae pretium, *it is worth while*; consultus, a, um, *familiar with*; juris consultus, *versed in equity*, or *law*; used as a noun it denotes *a barrister*, or *legal philosopher*; Aruns, Aruntis, m. *a man named Aruns*; nummas, i, *a piece of money*; famulus, i, m. *a slave.*

Exercises.—Latin-English.

Caecina milites temporis ac necessitatis monent; nunquam Atticum suscepti negotii pertaesum est; sapientem nunquam sui poenitet; grammaticos officii sui commonemus; homo nefarius certe aliquando cum dolore flagitiorum suorum recordabitur; est proprium stultitiae aliorum vitia cernere, oblivisci suorum; si apud te plus auctoritas mea valuisset, nihil sane esset quod nos poeniteret; res adversae admonuerunt eos religionum; infelicum hominum misereor; me vitae taedet; nunquam primi consilii Deum poenitet; virtus plurimae exercitationis indiget; pueri meminerint verecundiae; boni homines praeteriti temporis cum voluptate reminiscuntur; verus amicus amici nunquam oblivisciturr; venit mihi Platonis in mentem; non venit in mentem pugna apud Regillum lacum? est operae pretium majorum diligentiam recordari; oblivisci nihil soles nisi injurias; illud me praeclare admones; de lacrimis tuis recordor; Terentiam moneatis de testamento; Conon erat prudens rei militaris; Cato reipublicae peritus et juris consultus fuit; conscia mens recti famae mendacia risit; ignarus est astrologiae; rudes sunt artium hi homines; Pompeius me certiorem fecit sui consilii; Pythagoras sapientiae studiosos appellat philosophos; homo gloriae appetens saepe a virtutis viâ deflectit; quis famulus amantior domini est quam canis? vir probus tenax est propositorum bonorum; Ciceronis aetas virtutum ferax fuit; Carcer mercatorum completus est; vita sine amicis insidiarum et metûs plena est; referta quondam Italia Pythagoreorum fuit; Gallia frugum hominumque fertilis fuit; inops est auxilii humani; se tertium esse cri fatum foret urbis potiri dixit; exploratum mihi est te posse illius regni potiri; bestiae rationis et orationis sunt expertes; omnes virtutis compotes beati sunt; ira est impotens sui; id est cujusque proprium quo quisque fruitur; Tarquinius fratrem habuit Aruntem, mitis ingenii hominem; Xerxis classis mille et ducentarum navium fuit; insimulavit eum fugae et pavoris; te culpae libero, fili; parvi pretii est homo; agellus erat centum milium nummorum; magni mihi erunt tuae litterae; quanti est ista hominum gloria? Sextilius magni aestimabat pecuniam legibus partam; pravi homines sua parvi pendere, aliena cupere solent; pluris putare quod utile videatur quam quod honestum, turpissimum est; emit Canius hortos tanti quanti Pythius voluit; vendo meum frumentum non plaris quam ceteri, fortasse etiam minoris; ego non flocci pendo homines illos nefarios; rumores senum severiorum unius assis aestimemus; non assis facis me; quanti te facio? non assis; hic servus nauci non est; ludere hanc sinit, ut lubet, nec pili facit unius; quod permagni interest, pro necessario saepe habetur; Julius Caesar annum ad solis cursum accomodavit ut trecentarum sexaginta quinque dierum esset; Claudius erat somni brevissimi; Senonum civitas est inprimis firma et magnae inter Gallos auctoritatis; magni judicii, summae etiam facultatis debet esse orator; fies nobilium tuquoque fontium; cujusvis hominis est errare, nullius nisi insipientis in errore perseverare; tardi ingenii est, rivulos consectari, fontes verum non videre; nihil est tam angusti animi tamque parvi quam amare divitias; praeter Capitolium atque arcem omnia haec hostium erant; jam me Pompeii totum esse scis; duri hominis, vel vix hominis videtur, periculum capitis inferre multis; tempori cedere semper sapientis est habitum; Popilius claves portarum suae potestatis fecit; multum interest rei familiaris tuae te quam primum venire; tua et mea maxime interest te valere;*1 non tam interest quo animo scribatur quam quo accipiatur; id meâ minime refert; illorum magis quam suâ hoc refert; epistolae inventae sunt ut certiores faceremus absentes, si quid esset quod eos scire aut nostrâ ant ipsorum interesset; salutis communis interest te esse imperatorem;*2 non refert quam multos libros sed quam bonos habeas; Caesar dicere solebat non tam suâ quam reipublicae interesse uti salvus esset;*3 aeger est animi; amantissimus est tui; confusus et incertus animi abiit.

English-Latin.

It concerns the republic; it concerns me; it concerns them; it concerns all; it concerns no one; my son has informed me that he is about to return home; thy daughter has informed her mother that her husband is well (valére); I am confused in mind; bad men are often confused in mind; the queen reminds the senate of the crisis and the need; I am weary of the business I have undertaken; good men pity bad men; they are weary of life; I am reminded (it comes into my mind) that thou hast a wife; he recollected past things; thou art skilled in military affairs; is thy mind conscious of rectitude? I will inform thee of my plan; a boy, eager for letters, will become wise; the sea is full of fish; thy sister has (is of) a mild disposition; riches are highly valued by most men; what did you give for that book?† they do not care a farthing for me; it is ours to command, thine to obey; he was accused of treason (proditio), he will be condemned to death; the enemy has got possession of thekeys of the city.

*1 2 3 In these instances it is seen that an infinitive mood may be the subject of a verb. Te valere is the subject to interest; as te esse imperatorem is the subject to interest on its second occurrence. In the third instance a clause, uti salvus esset, is the subject.

† That is, for how much didst thou buy that book.

LESSONS IN FRENCH.—No. LVI.

By Professor Louis Fasquelle, LL.D.

(3.) AVOIR,—INTERROGATIVELY.

Indicative Mode.

SIMPLE TENSES.		COMPOUND TENSES.		
PRESENT.		PAST INDEFINITE.		
Ai-je?	*have I?*	Ai je eu?	*have I*	*had?*
As-tu?	*hast thou?*	As-tu eu?	*hast thou*	
A-t-il? (*)	*has he?*	A-t-il eu?	*has he*	
A-t-on? (*)	*has one?*	A-t-on eu?	*has one*	
Avons-nous?	*have we?*	Avons-nous eu?	*have we*	
Avez-vous?	*have you?*	Avez-vous eu?	*have you*	
Ont-ils?	*have they?*	Ont-ils eu?	*have they*	
IMPERFECT.		PLUPERFECT.		
Avais je?	*had I?*	Avais je eu?	*had I*	*had?*
Avais-tu?	*hadst thou?*	Avais-tu eu?	*hadst thou*	
Avait il?	*had he?*	Avait-il eu	*had he*	
Avait-on?	*had one?*	Avait-on eu?	*had one*	
Avions-nous?	*had we?*	Avions-nous eu,	*had we*	
Aviez-vous?	*had you?*	Aviez-vous eu?	*had you*	
Avaient-ils?	*had they?*	Avaient-ils eu?	*had they*	
PAST DEFINITE		PAST ANTERIOR.		
Eus-je?	*had I?*	Eus-je eu?	*had I*	*had?*
Eus-tu	*hadst thou?*	Eus-tu eu?	*hadst thou*	
Eut-il?	*had he?*	Eut-il eu?	*had he*	
Eut-on?	*had one?*	Eut on eu?	*had one*	
Eûmes-nous?	*had we?*	Eûmes-nous eu?	*had we*	
Eûtes-vous?	*had you?*	Eûtes-vous eu?	*had you*	
Eurent-ils?	*had they?*	Eurent-ils eu?	*had they*	
FUTURE.		FUTURE ANTERIOR.		
Aurai-je?	*shall I have?*	Aurai-je eu?	*shall I*	*have had?*
Auras-tu?	*shalt thou have?*	Auras-tu eu?	*shalt thou*	
Aura-t-il?	*will he have?*	Aura-t-il eu?	*shall he*	
Aura-t-on?	*shall one have?*	Aura-t-on eu?	*shall one*	
Aurons-nous	*shall we have?*	Aurons-nous eu?	*shall we*	
Aurez-vous?	*will you have?*	Aurez-vous eu?	*shall you*	
Auront-ils?	*shall they have?*	Auront-ils eu?	*shall they*	

Conditional Mode.

PRESENT.		PAST.		
Aurais-je?	*should I have?*	Aurais-je eu?	*should I*	*have had?*
Aurais-tu?	*shouldst thou have?*	Aurais-tu eu?	*wouldst thou*	
Aurait-il?	*should he have?*	Aurait-il eu?	*would he*	
Aurait-on?	*would one have?*	Aurait-on eu?	*would one*	
Aurions-nous?	*would we have?*	Aurions-nous eu?	*should we*	
Auriez-vous?	*would you have?*	Auriez-vous eu?	*should you*	
Auraient-ils?	*should they have?*	Auraient-ils eu?	*would they*	

(4.) AVOIR,—NEGATIVELY AND INTERROGATIVELY.

Indicative Mode.

SIMPLE TENSES.		COMPOUND TENSES.		
PRESENT.		PAST INDEFINITE.		
N'ai-je pas?	*have I not?*	N'ai-je pas eu,	*have I*	*not had?*
N'as-tu pas?	*hast thou not?*	N'as-tu pas eu?	*hast thou*	
N'a-t-il pas?	*has he not?*	N'a-t-il pas eu,	*has he*	
N'a-t-on pas?	*has one not?*	N'a-t-on pas eu?	*has one*	
N'avons-nous pas?	*have we not?*	N'avons-nous pas eu?	*have we*	
N'avez-vous pas?	*have you not?*	N'avez-vous pas eu?	*have you*	
N'ont-ils pas?	*have they not?*	N'ont-ils pas eu?	*have they*	
IMPERFECT.		PLUPERFECT.		
N'avais je pas?	*had I not?*	N'avais-je pas eu?	*had I*	*not had?*
N'avais-tu pas?	*hadst thou not?*	N'avais-tu pas eu?	*hadst thou*	
N'avait-il pas?	*had he not?*	N'avait il pas eu?	*had he*	
N'avait-on pas?	*had one not?*	N'avait-on pas eu?	*had one*	
N'avions-nous pas?	*had we not?*	N'avions-nous pas eu?	*had we*	
N'aviez-vous pas?	*had you not?*	N'aviez-vous pas eu?	*had you*	
N'avaient-ils pas?	*had they not?*	N'avaient-il pas eu?	*had they*	
PAST DEFINITE.		PAST ANTERIOR.		
N'eus-je pas?	*had I not?*	N'eus-je pas eu?	*had I*	*not had?*
N'eus-tu pas?	*hadst thou not?*	N'eus-tu pas eu?	*hadst thou*	
N'eut-il pas?	*had he not?*	N'eut-il pas eu?	*had he*	
N'eut-on pas?	*had one not?*	N'eut-on pas eu?	*had one*	
N'eûmes-nous pas?	*had we not?*	N'eûmes-nous pas eu?	*had we*	
N'eûtes-vous pas?	*had you not?*	N'eûtes-vous pas eu?	*had you*	
N'eurent-ils pas?	*had they not?*	N'eurent-ils pas eu?	*had they*	

(*) See Lesson 4, Rule 6.

FUTURE.		FUTURE ANTERIOR.		
N'aurai-je pas?	*shall I*	N'aurai-je pas eu?	*shall I*	*not have had?*
N'auras-tu pas?	*shalt thou*	N'auras-tu pas eu?	*shalt thou*	
N'aura t-il pas?	*shall he*	N'aura-t-il pas eu?	*shall he*	
N'aura-t-on pas?	*shall one*	N'aura-t-on pas eu?	*shall one*	
N'aurons-nous pas?	*shall we*	N'aurons-nous pas eu?	*shall we*	
N'aurez-vous pas?	*shall you*	N'aurez-vous pas eu,	*shall you*	
N'auront-ils pas?	*shall they*	N'auront-ils pas eu?	*shall they*	

Conditional Mode.

PRESENT.		PAST.		
N'aurais-je pas?	*should I*	N'aurais-je pas eu?	*should I*	*not have had?*
N'aurais-tu pas?	*shouldst thou*	N'aurais-tu pas eu?	*shouldst thou*	
N'aurait-il pas?	*should he*	N'aurait-il pas eu?	*should he*	
N'aurait-on pas?	*should one*	N'aurait-on pas eu?	*should one*	
N'aurions-nous pas?	*should we*	N'aurions-nous pas eu?	*should we*	
N'auriez-vous pas?	*should you*	N'auriez-vous pas eu?	*should you*	
N'auraient-ils pas?	*should they*	N'auraient-ils pas eu?	*should they*	

(5.) ETRE,—*TO BE*,—AFFIRMATIVELY.

Indicative Mode.

SIMPLE TENSES.		COMPOUND TENSES.		
PRESENT.		PAST INDEFINITE.		
Je suis,	*I am*	J'ai été,	*I have been*	*have been*
Tu es,	*thou art*	Tu as été,	*thou hast been*	
Il est,	*he is*	Il a été,	*he has been*	
On est,	*one is*	On a été,	*one has been*	
Nous sommes,	*we are*	Nous avons été,	*we have been*	
Vous êtes,	*ye or you are*	Vous avez été,	*you have been*	
Ils sont,	*they are*	Ils ont été,	*they have been*	
IMPERFECT.		PLUPERFECT.		
J'étais,	*I was or used to be*	J'avais été,	*I had been*	*have been*
Tu étais,	*thou wast*	Tu avais été,	*thou hadst been*	
Il était,	*he was*	Il avait été,	*he had been*	
On était,	*one was*	On avait été,	*one had been*	
Nous étions,	*we were*	Nous avions été,	*we had been*	
Vous étiez,	*you were*	Vous aviez été,	*you had been*	
Ils étaient,	*they were*	Ils avaient été,	*they had been*	
PAST INDEFINITE.		PAST ANTERIOR.		
Je fus,	*I was*	J'eus été,	*I had been*	*have been*
Tu fus,	*thou wast*	Tu eus été,	*thou hadst been*	
Il fut,	*he was*	Il eut été,	*he had been*	
On fut,	*one was*	On eut été,	*one had been*	
Nous fûmes,	*we were*	Nous eûmes été,	*we had been*	
Vous fûtes,	*you were*	Vous eûtes été,	*you had been*	
Ils furent,	*they were*	Ils eurent été,	*they had been*	
FUTURE.		FUTURE ANTERIOR.		
Je serai,	*I shall be, will be*	J'aurai été,	*I shall*	*have been*
Tu seras,	*thou wilt be*	Tu auras été,	*thou shalt*	
Il sera,	*he shall be*	Il aura été,	*he shall*	
On sera,	*one shall be*	On aura été,	*one shall*	
Nous serons,	*we shall be*	Nous aurons été,	*we shall*	
Vous serez,	*you shall be*	Vous aurez été,	*you will*	
Ils seront,	*they shall be*	Ils auront été,	*they will*	

Conditional Mode.

PRESENT.		PAST.		
Je serais,	*I should be*	J'aurais été,	*I should*	*have been*
Tu serais,	*thou shouldst be*	Tu aurais été,	*thou shouldst*	
Il serait,	*he would be*	Il aurait été,	*he would*	
On serait,	*one should be*	On aurait été,	*one would*	
Nous serions,	*we would be*	Nous aurions été,	*we should*	
Vous seriez,	*you should be*	Vous auriez été,	*you should*	
Ils seraient,	*they would be*	Ils auraient été,	*they should*	

Imperative Mode.

Sois,	*be thou*
Qu'il soit,	*let him be*
Qu'on soit,	*let one be*
Soyons,	*let us be*
Soyez,	*be ye or you*
Qu'ils soient,	*let them be.*

Subjunctive Mode.

SIMPLE TENSES.		COMPOUND TENSES.	
PRESENT.		PAST.	
Que je sois,	*that I may be*	Que j'aie été	*that I may*
Que tu sois,	*that thou mayest be*	Que tu aies été,	*that thou mayest*
Qu'il soit,	*that he may be*	Qu'il ait été,	*that he may*
Qu'on soit,	*that one may be*	Qu'on ait été,	*that one may*
Que nous soyons,	*that we may be*	Que nous ayons été,	*that we may*
Que vous soyez,	*that you may be*	Que vous ayez été,	*that you may*
Qu'ils soient,	*that they may be*	Qu'ils aient été,	*that they may*
			have been
IMPERFECT.		PLUPERFECT.	
Que je fusse,	*that I might be*	Que j'eusse été,	*that I might*
Que tu fusses,	*that thou mightest be*	Que tu eusses été,	*that thou mightest*
Qu'il fût,	*that he might be*	Qu'il eût été,	*that he might*
Qu'on fût,	*that one might be*	Qu'on eût été	*that one might*
Que nous fussions,	*that we might be*	Que nous eussions été,	*that we might*
Que vous fussiez,	*that you might be*	Que vous eussiez été,	*that you might*
Qu'ils fussent,	*that they might be*	Qu'ils eussent été,	*that they might*
			have been

Infinitive Mode.

PRESENT.		PAST.	
Etre,	*to be*	Avoir été,	*to have been*

Participle.

PRESENT.		COMPOUND.	
Etant,	*being*	Ayant été,	*having been*

Past or Passive.

Eté, *been*

§ 48.—Regular Verbs.

FIRST CONJUGATION, ENDING IN *ER*.

MODEL VERB.

CHANTER, *TO SING*.

Indicative Mode.

SIMPLE TENSES.		COMPOUND TENSES.	
PRESENT.		PAST DEFINITE.	
Je chante,	*I sing*	J'ai chanté,	*I have sung*
Tu chantes,	*thou singest*	Tu as chanté,	*thou hast sung*
Il chante,	*he sings*	Il a chanté,	*he has sung*
On chante,	*one sings*	On a chanté,	*one has sung*
Nous chantons,	*we sing*	Nous avons chanté,	*we have sung*
Vous chantez,	*you sing*	Vous avez chanté,	*you have sung*
Ils chantent.	*they sing*	Ils ont chanté	*they have sung*
IMPERFECT.		PLUPERFECT.	
Je chantais,	*I was singing*, or *I used to sing*	J'avais chanté,	*I had*
Tu chantais,	*thou wast singing*	Tu avais chanté,	*thou hadst*
Il chantait,	*he was singing*	Il avait chanté	*he had*
On chantait,	*one was singing*	On avait chanté,	*one had*
Nous chantions,	*we were singing*	Nous avions chanté,	*we had*
Vous chantiez,	*you were singing*	Vous aviez chanté,	*you had*
Ils chantaient,	*they were singing*	Ils avaient chanté,	*they had*
			been singing
PAST DEFINITE.		PAST ANTERIOR.	
Je chantai,	*I sang* or *did sing*	J'eus chanté,	*I had sung*
Tu chantas,	*thou sangest*	Tu eus chanté,	*thou hadst sung*
Il chanta,	*he sang*	Il eut chanté,	*he had sung*
On chanta,	*one sang*	On eut chanté,	*one had sung*
Nous chantâmes,	*we sang*	Nous eûmes chanté,	*we had sung*
Vous chantâtes,	*you sang*	Vous eûtes chanté	*you had sung*
Ils chantèrent,	*they sang*	Ils eurent chanté,	*they had sung*
FUTURE.		FUTURE ANTERIOR.	
Je chanterai,	*I shall* or *will sing*	J'aurai chanté,	*I will*
Tu chanteras,	*thou wilt sing*	Tu auras chanté,	*thou shalt*
Il chantera,	*he will sing*	Il aura chanté,	*he will*
On chantera,	*one will sing*	On aura chanté	*one will*
Nous chanterons,	*we shall sing*	Nous aurons chanté,	*we shall*
Vous chanterez,	*you will sing*	Vous aurez chanté,	*you will*
Ils chanteront,	*they will sing*	Ils auront chanté,	*they shall*
			have sung

Conditional Mode.

PRESENT.		PAST.	
Je chanterais,	*I should*, or *would sing*	J'aurais chanté,	*I should*
Tu chanterais,	*thou shouldest sing*	Tu aurais chanté,	*thou wouldest*
Il chanterait,	*he should sing*	Ils aurait chanté,	*he would*
On chanterait,	*one should sing*	On aurait chanté,	*one would*
Nous chanterions,	*we would sing*	Nous aurions chanté,	*we would*
Vous chanteriez,	*you would sing*	Vous auriez chanté,	*you would*
Ils chanteraient,	*they would sing*	Ils auraient chanté,	*they would*
			have sung

Imperative Mode.

Chante,	*sing thou*
Qu'il chante	*let him sing*
Qu'on chante,	*let one sing*
Chantons,	*let us sing*
Chantez,	*sing ye* or *you*
Qu'ils chantent,	*let them sing*

Subjunctive Mode.

SIMPLE TENSES.		COMPOUND TENSES.	
PRESENT.		PAST.	
Que je chante,	*that I may sing*	Que j'aie chanté,	*that I may*
Que tu chantes,	*that thou mayest sing*	Que tu aies chanté,	*that thou mayest*
Qu'il chante,	*that he may sing*	Qu'il ait chanté,	*that he may*
Qu'on chante,	*that one may sing*	Qu'on ait chanté,	*that one may*
Que nous chantions,	*that we may sing*	Que nous ayons chanté,	*that we may*
Que vous chantiez,	*that you may sing*	Que vous ayez chanté,	*that you may*
Qu'ils chantent,	*that they may sing*	Qu'ils aient chanté,	*that they may*
			have sung
IMPERFECT.		PLUPERFECT.	
Que je chantasse,	*that I might sing*	Que j'eusse chanté,	*that I might*
Que tu chantasses,	*that thou mightest sing*	Que tu eusses chanté,	*that thou mightest*
Qu'il chantât,	*that he might sing*	Qu'il eût chanté,	*that he might*
Qu'on chantât,	*that one might sing*	Qu'on eût chanté,	*that one might*
Que nous chantassions,	*that we might sing*	Que nous eussions chanté,	*that we might*
Que vous chantassiez,	*that you might sing*	Que vous eussiez chanté,	*that you might*
Qu'ils chantassent,	*that they might sing*	Qu'ils eussent chanté,	*that they might*
			have sung

Infinitive Mode.

PRESENT.		PAST.	
Chanter,	*to sing*	Avoir chanté,	*to have sung*

Participle.

PRESENT.		COMPOUND.	
Chantant,	*singing*	Ayant chanté,	*having sung*

PAST OR PASSIVE.

Chanté, *sung*

LESSONS IN ARITHMETIC—No. XXV.

VULGAR FRACTIONS.

The following are the answers to the exercises given in our last lesson:—

EXERCISES TO PROBLEM VIII.

Rule 2.—Answers: (1.) $59\frac{1}{4}$; (2.) $77\frac{3}{5}$; (3.) $79\frac{21}{125}$; (4.) 49; (5.) $302\frac{10}{11}$; (6.) $1\frac{73}{117}$.

Rule 4.—Answers: (1.) $20\frac{1}{3}$; (2.) $65\frac{14}{15}$; (3.) $3402\frac{21}{115}$; (4.) $7361\frac{51}{64}$; (5.) $111147\frac{9}{10}$; (6.) $19961414\frac{1}{3}$.

EXERCISES TO PROBLEM IX.

Rule 1.—Answers: (1.) $\frac{3}{7}$; (2.) $\frac{11}{15}$; (3.) $1\frac{5}{12}$; (4.) $2\frac{111}{125}$; (5.) $1\frac{9}{169}$; (6.) 400.

DIVISION OF FRACTIONS.

Rule 2.—When the divisor is a whole number, and the dividend a fraction. Multiply the denominator of the fraction by the given whole number, and place the product under the numerator, the result is the answer. The reason of this rule is plain from Principle 3, Art. 12, p. 134, vol. II. It may be observed, however, that if the numerator of the fraction can be divided by the given whole number without leaving a remainder, it will be easier so to do, and place the quotient over the denominator, the result

is then the answer, in lower terms. This process is also explained in the place to which we have just referred.

EXAMPLE 1.—Divide $\frac{7}{8}$ by 12.

Here, $8 \times 12 = 96$; and $\frac{7}{96}$ is the answer.

EXAMPLE 2.—Divide $\frac{156}{18}$ by 12.

Here, $156 \div 12 = 13$; and $\frac{13}{18}$ is the answer.

EXERCISES.

Find the quotients indicated by the following expressions:—

(1.) $\frac{1}{2} \div 9$; (2.) $\frac{4}{7} \div 12$; (3.) $\frac{66}{117} \div 11$; (4.) $\frac{13}{18} \div 52$; (5.) $\frac{111}{123} \div 37$; (6.) $\frac{3}{4} \div 400$.

RULE 3.—When the divisor is a fraction, and the dividend a whole number. Multiply the given whole number by the denominator of the fraction, and divide the product by its numerator, the quotient is the answer. The reason of this rule depends on the principle that as the divisor consists of a certain number of parts of a unit, and the dividend of a certain number of units, it is necessary first to find how many parts of the same kind that the divisor consists of, are contained in the dividend; and then to find how often the parts of which the divisor consists, are contained in those of which the dividend consists. Now the number of parts of which the dividend consists is found by multiplying it by the denominator of the divisor; and the number of times that this product contains the number of parts of which the divisor consists, is found by dividing it by the numerator of the divisor; hence the rule.

EXAMPLE.—Divide 14 by $\frac{5}{8}$.

Here, $14 \times 8 = 112$; and $112 \div 5 = 22\frac{2}{5}$, the answer.

EXERCISES.

Find the quotients indicated by the following expressions:—

(1.) $12 \div \frac{7}{8}$; (2.) $172 \div \frac{1}{2}$; (3.) $5 \div \frac{1}{100}$; (4.) $1000 \div \frac{5}{16}$; (5.) $1 \div \frac{1}{100}$; 6. $75 \div \frac{3}{4}$.

RULE 4.—When the divisor is a mixed number, and the dividend a whole number. Reduce the mixed number to an improper fraction, and then proceed according to the preceding rule. The explanation of this rule is included in that of the preceding one.

EXAMPLE.—Divide 120 by $14\frac{3}{4}$.

Here, $14\frac{3}{4} = \frac{59}{4}$; $120 \times 4 = 480$, and $\frac{480}{59} = 8\frac{8}{59}$, the answer.

EXERCISES.

Find the quotients indicated by the following expressions:—

1.) $112 \div 7\frac{1}{2}$; (2.) $160 \div 9\frac{3}{8}$; (3.) $1000 \div 1\frac{1}{2}$; (4.) $800 \div 800\frac{1}{4}$; (5.) $1 \div 1\frac{3}{4}$; (6.) $2 \div 2000\frac{1}{2}$.

RULE 5.—When the divisor is a whole number, and the dividend a mixed number. Reduce the mixed number to an improper fraction, and then proceed according to Rule 2. The explanation of this rule will be the same as that of Rule 2.

EXAMPLE.—Divide $14\frac{3}{4}$ by 5.

Here, $14\frac{3}{4} = \frac{59}{4}$; $4 \times 5 = 20$; and $\frac{59}{20} = 2\frac{19}{20}$, the answer.

Otherwise.—Divide the integer of the mixed number by the divisor, and note the quotient and remainder. Then, bring the remainder and the fraction of the mixed number to an improper fraction, and proceed according to Rule 2; the result annexed to the former quotient will be the same as before.

EXAMPLE.—Divide $14285\frac{3}{7}$ by 9.

Here, $14285 \div 9 = 1587$, with 2 as the remainder; then $2\frac{3}{7} = \frac{17}{7}$; and $7 \times 9 = 63$; whence, $\frac{17}{63}$ is the result to be annexed to 1587; and $1587\frac{17}{63}$ is the answer required.

According to the former rule, the process would be as follows:—

First, $14285\frac{3}{7} = \frac{100008}{7}$; then, $7 \times 9 = 63$; and $\frac{100008}{63} = 1587\frac{17}{63}$, the answer, as before.

EXERCISES.

Find the quotients indicated by the following expressions:—

(1.) $17\frac{2}{3} \div 7$; (2.) $100\frac{3}{4} \div 12$; (3.) $14008\frac{1}{2} \div 9$; (4.) $4783965\frac{14}{17} \div 112$; (5.) $1000\frac{9}{17} \div 18$; (6.) $1\frac{3}{7} \div 800$.

RULE 6.—When the divisor and dividend are both mixed numbers. Reduce them both to improper fractions, and then apply Rule 1. The reason assigned for Rule 1, is equally applicable to the present rule.

EXAMPLE.—Divide $5\frac{2}{3}$ by $3\frac{1}{4}$.

Here, $5\frac{2}{3} = \frac{17}{3}$, and $3\frac{1}{4} = \frac{13}{4}$; then $\frac{17}{3} \times \frac{4}{13} = \frac{68}{39} = 1\frac{29}{39}$; the answer.

EXERCISES.

Find the quotients indicated by the following expressions:—

(1.) $7\frac{1}{2} \div 5\frac{1}{8}$; (2.) $98\frac{1}{10} \div 17\frac{1}{2}$; (3.) $407\frac{3}{8} \div 55\frac{2}{7}$; (4.) $1428\frac{3}{7} \div 8\frac{1}{4}$; 5.) $1900\frac{3}{7} \div 10\frac{1}{3}$; (6.) $1\frac{6}{7} \div 2\frac{13}{14}$.

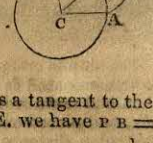
SOLUTION OF PROBLEMS AND QUERIES.

At the request of several ingenious correspondents, we insert the solution of the following query, proposed at p. 336, Vol. I.

"If a hundred yards of string were wound round a stick an inch in diameter, what distance would a person have to walk (supposing him to keep at the end of the string and the string to be always kept tight from the stick), in order to unwind it."

Let π be the circumference of a circle whose diameter is *one* inch; then the number of inches denoted by π will be unwound from the stick at every turn of the string. Now in 100 yards of string there are 3600 inches; whence $\frac{3600}{\pi}$ = the number of turns of the string before it is entirely unwound. But the person who unwinds the string will have to describe in walking as many involutes * of circles as this number denotes, the circles themselves continually varying from 1 inch to 7201 inches in diameter. Hence in the arithmetical progression of circles whose involutes are described, the first term will be 1π and the last term 7201π. But in such a progression the sum of the series is equal to half the sum of the first and last terms, multiplied by the number of terms; wherefore $3601\pi \times \frac{3600}{\pi} = 3600^2 + 3600 = 12963600$ inches $= 204$ miles and 1060 yards, which is the answer to the question.

This question is more properly solved by means of the Differential and Integral Calculus as follows: in the adjacent figure, let the circle A D B represent a section of the stick perpendicular to its length. Let P B be a part of the string unwound, and A P a part of the involute or path of the unwinder. Let the arc A P of this curve $= z$; the radius of the circle A C or B C $= a$; the radius vector P C $= r$; and the angle A C P $= \theta$. Then by the unwinding of the string, the straight line P B, which is a tangent to the circle, is equal to the arc B D A. From 47, I. E. we have P B $= \sqrt{(r^2 - a^2)}$; and by Trigonometry, the arc B D $= a$ sec $^{-1}\frac{r}{a}$; and the arc A D $= a\theta$; therefore the straight line P B = the arc B D A $= a$ sec $^{-1}\frac{r}{a} + a\theta$; consequently, $\sqrt{(r^2 - a^2)} = a$ sec $^{-1}\frac{r}{a} + a\theta$; and $\theta = \frac{\sqrt{(r^2 - a^2)}}{a} - \text{sec}^{-1}\frac{r}{a}$. Now, by the Differential Calculus, we have $dz = \sqrt{[dr^2 + r^2 d\theta^2]}$; and by the Integral Calculus, $z = \int \sqrt{[dr^2 + r^2 d\theta^2]}$. But, by the preceding notation, we have $d\theta = \frac{r\,dr}{a\sqrt{(r^2 - a^2)}} - \frac{a\theta\, r}{r\sqrt{(r^2 - a^2)}} = \frac{\sqrt{(r^2 - a^2)}}{a\,r}\,dr$; whence $d\theta^2 = \frac{r^2 - a^2}{a^2 r^2}\,dr^2$, and $z = \int \sqrt{[dr^2 + \frac{r^2 - a^2}{a^2}\,dr^2]} = \int \frac{r\,dr}{a}$. Now, by integrating this value of z between the limits $r = a$, and $r = b$, we have $\int_a^b \frac{r\,dr}{a} = \frac{b^2 - a^2}{2a}$; and in this expression, supposing $b = 3600\frac{1}{2}$ inches, and $a = \frac{1}{2}$ inch, we have $\frac{(3600\frac{1}{2})^2 - (\frac{1}{2})^2}{2 \times \frac{1}{2}}$ $= 3600^2 + 3600 = 12963600$ inches, the whole length of the string, which is 204 miles and 1060 yards as before.



This question was solved in a manner similar to the preceding by A LEARNER; Greenock; and according to various other modes, by E. C. HUGHES, Islington; J. J. WHITEHEAD and J. BROOK, Paddock; J. LOVETT, and THOMAS HALLAM, Manchester; the solution of the latter being that which gave the answer nearest the truth.

* The involute of a circle is the curve formed by gradually unwinding a string or thread wrapped round its circumference.

LESSONS IN MECHANICS.—No. X.

NAVAL ARCHITECTURE.

WOOD AND IRON.

In the building of ships the English have long held an eminent position. Our ancient British forefathers were famous for their coracles, and from coracles to iron-plated frigates is but a succession of steps.

Iron is fast supplanting wood—ore against timber; and it is not without reason that a facetious contemporary makes the Jack Tar of a future age cry, "Shiver my *rivets*," instead of timbers! But although iron vessels are rapidly taking the place of our ordinary craft, it may not be inappropriate to describe briefly the process of ordinary ship-building.

ARCHITECT'S DESIGN.

First of all, the architect, or ship draftsman, prepares his plan, and makes his drawings of the vessel; these drawings are usually made on the scale of a quarter of an inch to the foot.

MOULDING THE SHIP.

The next point is to mould the ship. This is done on a moulding floor, half the length and the full height of the vessel. The length and breadth and curvatures of every timber are chalked down by the draftsman; the two halves of the vessel are represented on the same floor, the lines intersecting each in all directions, but sufficiently distinct to be easily recognisable by the carpenters. Thin slips of deal are then cut and adjusted to every chalk line, and these deals are handed to the sawyers who have to prepare the timbers for the ship. The model of every timber is thus first chalked out, then cut in deal, then submitted to the sawyers, who have simply to follow their model, or rather mould, with the utmost precision.

SAW-PITS.

The timbers of oak or elm are prepared in a saw-pit; they have to be selected with great judgment—perfectly sound and good—crooked trunks for crooked timbers, the different quality of wood being chosen with regard to its relative value in different parts of the ship.

BUILDING SHEDS.

The ship is erected in what is called a building slip. The ground so denominated is cleared, and made tolerably clean; blocks are then laid down from end to end of the vessel. They are made of oak, and placed one upon another to the height of three or four feet, at a distance of about six feet apart; they form the work bench on which the vessel is to be built.

The first part of the ship laid down is the *keel*. This is the very lowest part of the vessel—the backbone of the ship—it is usually made of elm, and in all cases, excepting those of very small vessels, has to be joined together by means of scarfing. From this keel spring the frame timbers, or ribs of the ship. Two of these timbers are the most important; these are the *stem* and the *sternpost*. The stem curves upward from the foremost end of the keel. The sternpost rises perpendicularly from the lower end. Both are formed of oak. The elegant curve of the vessel's stern is given by various timbers springing from the sternpost, and called *transoms*. Various lighter timbers spring from the stern, connecting it more closely with the keel, and joining it to the planks and timbers which subsequently form the sides of the ship.

All along the keel, and at right angles with it, are laid strong timbers, slightly concave on their upper surface, and known as *floor timbers*. From this flooring spring the various side timbers, known as *ribs*. These ribs are, of necessity, usually made in several pieces, known as *futtocks*, being strongly compacted together. The curvature and weight of these ribs render it imperatively necessary to secure them in their position as the work of building proceeds. This is done by planks stretching from side to side with the keel, and called *cross spalls*; and by shoring up the ribs on the outer side by poles and horizontal planks.

The keel thus laid, the stem and sternpost planted, the floor timbers adjusted, and the ribs raised; we have the completed outer skeleton of the hull.

The keel, the sternpost, and the stem are the main supports of the basement of the hull. There are three other timbers of almost equal importance, which bear a close relationship to these. They are the *keelson*, the *sternson*, and the *transom*. The first of these is fixed above the timber floooring, and receives the masts; the second and third form in their respective positions the internal supports to the ends of the vessel.

The keel, ribs, sternpost, and stem are the skeleton of the ship; but the skeleton is not to be exposed. The framework of timber is covered within and without with planking, laid in nearly horizontal rows, or, as they are called, "*strakes*." The planks are from three to six inches in thickness, twenty-five to thirty feet in length, and usually of oak. In the saw-pit they are reduced as nearly as possible to the form required, and are afterwards finished with the plane and adze. The chief difficulty in planking a ship is to bend the planks to the required curve, previously to bolting them together; this is usually facilitated by warping the wood with steam.

The *beams* of the vessel are the stout, sturdy timbers which stretch from side to side, and serve to support the decks, as well as to bind the sides together. The beams are sometimes formed of solid timber; at others, of three pieces scarfed together. The ends rest on planks, called clamps; and iron brackets, called *knees*, bolt the beams and the timbers of the ship together.

After the beams have been secured the decks are laid down, and divide the hull into different storeys, answering to the floors or storeys of a dwelling-house. The decks are usually made of fir or pine wood; the planks vary from six to ten inches in breadth, and are laid parallel to the keel; they are nailed down to the beams.

The planks of the ship are bolted together when first laid on, but they are afterwards joined with trenails. This operation is not performed until the planks have had some time to season. The holes for the reception of the trenails are made with an auger; they pass through the outer planking and framework, and through the inner planking also; the trenails, or wooden pins, are then hammered in, and are made to bind the whole three—outer planking, inner planking, and beams—together.

ANSWERS TO CORRESPONDENTS.

Une Jeune Anglaise.—The best way to teach a young child French is by proceeding just in the same way as you would in teaching English. Let it learn the names of things:—*Lune*, for moon; *mère*, for mother, &c. Teach it to ask questions in French, by familiarising it with the sound of the language. A young child cannot be supposed to understand the rules of grammar; teach it to speak correctly without at first learning the rules.

T. O. M.—When a young man asked Daniel Webster whether the profession of the law was over-crowded, he said, "There is plenty of room up-stairs;" meaning that there is always room for men of more than mediocre ability. If you are really clever, you will find ample scope for your ability. If you are a mere drudge, you will find not only the profession to which you allude, but every profession and trade over-crowded.

L. B.—The word *anagram* is derived from the Greek, ἀνά and γράμμα, a letter, and is applied to the transposition of the letters of a name or word, by which a new word or name is formed. Levi, for example, may be transposed into *vile*, or *evil*. Astronomer, into *moon-starer*, or *no more stars*. The words Charles James Stuart can be transposed into *Claims Arthur's Seat*.

Impatient: The Act may be obtained at the Queen's Printing Office, near Gough Square, Fleet Street.—Matelot: No; acquire it as you proceed. Defective.—F. B. (Leeds) is recommended to apply to the Missionary Society associated with that denomination of the Christian Church to which he belongs.

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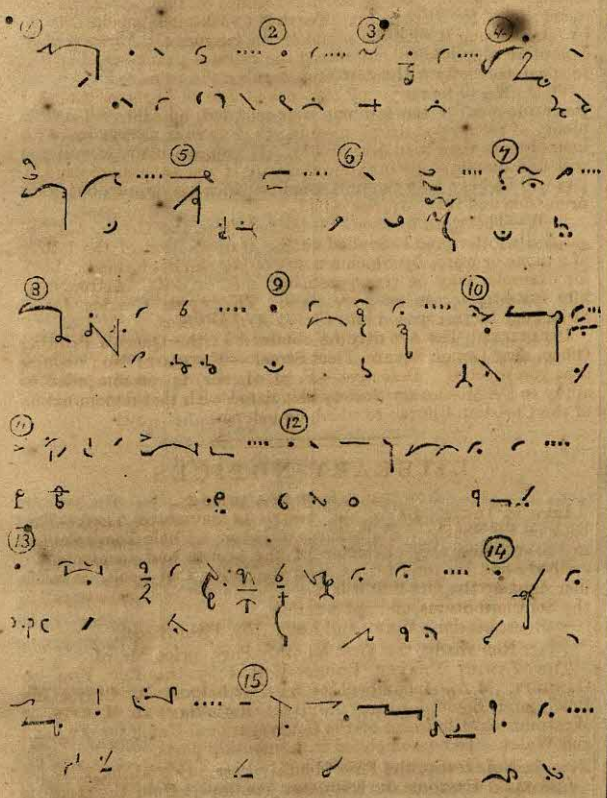
LESSONS IN PHONETIC SHORT-HAND.—No. VIII.

By Alex. Melville Bell, F.R.S.S.A.,

Professor of Elocution and Vocal Physiology, Member of the British Phonetic Council, Author of the "Principles of Speech and Elocution"—"The Elocutionary Manual"—"Steno-phonography,"—&c.

99. In order to apply the logograms, the student has but to learn the simple *alphabetic list* (par. 96.): he does not require to commit to memory the symbols for the derivative words. Let him write them merely as an exercise. His knowledge of the alphabet will enable him to produce them with sufficient accuracy for general notation, without special study. Indeed, in reporting, *the simple radical logogram itself may, in most cases, be safely used for any of its derivatives.* The context will generally preclude ambiguity.

100. The following illustrations will sufficiently show the mode in which the logograms are written, and the certainty with with which they may be distinguished from other words in reading:—



1. Blessed be the *God* and *Father* of our *Lord Jesus Christ.* 2. The *King* of *Israel.* 3. Thy *Redeemer* the Holy One of *Israel.* 4. Live soberly, *righteously*, and *godly* in this present evil *world.* 5. Having obtained *eternal redemption* for us. 6. *Men* and *brethren*, this scripture must be fulfilled. 7. All the *heathen* shall see my *judgment.* 8. Visiting the iniquities of *fathers* upon *children's children.* 9. The *author* of peace, as in all *churches* of the saints. 10. *Education* should be the *common* birthright of a free *people.* 11. I *know not* if it be *unknown* to you, but I trust to your *acknowledgment.* 12. The *Lords* and *Commons* have *now* got possession of the *New Houses of Parliament.* 13. The *right honourable lord* introduced the *bill* in a speech of *uncommon* excellence, in which he entered upon a detailed explanation of the *principles* of the *new measure.* 14. The *principal* opponents of the *motion* were parties *adverse* to the *popular* interests. 15. A *parliamentary* committee has *been* wisely ordered to inquire into the *usages* of the *universities.*

101. This principle of constructing logograms may be extended to all the *syllabic combinations of letters*—such as *bd, bf, bg, bl,* &c.; *db, df, dg,* &c.; *fb, fd,* &c.; each combination being assumed to represent a common word containing the letters as prominent elements, and all derivative words being denoted by minute alphabetic additions to the root-symbol. A vocabulary of syllabic logograms, constructed on this principle, is in preparation by the author of these lessons.

102. The subordinate words, as illustrated in the two preceding lessons, are drawn on rather a large scale, to give the forms the more distinctness to the learner's eye. In practice they may be considerably reduced in size; indeed, as a general rule, *the subordinate symbols*, and *all contracted letters, can hardly be written too small.*

103. The principle of GROUPING *the subordinate words constructively*, though a great assistance to fluent reading, and an effective species of punctuation, is not in any way *essential* to the writing. Those learners who may prefer to maintain a *continuous line* in writing, will find nothing in the system to prevent their doing so. The symbols "*and*" and "*but*" will simply require to be written as *logograms*—below the general line of commencement. All the other subordinate words may be written either in groups or separately, without ambiguity.

104. In writing, whether with or without groups, the neatest work will be made by commencing the characters immediately *below*, rather than *upon*, a line.

NOTATION OF VOWELS.

105. It now only remains that we furnish a vowel scheme, in order to complete this system of short-hand. Vowel notation we have shown to be, by this system, altogether *unnecessary for all the ordinary purposes of stenography*; but it is of course indispensable for the accurate notation of "speech as it is spoken." The learner will rarely have occasion to employ the distinctive vowel symbols unless in writing *proper* names, *foreign* words, or *scientific* terms.

106. In the following classification, the distinctions are much more minute than have been generally attempted. We can be strictly scientific here without danger of complexity; for, while we enable the orthoepist to express every shade of vowel quality, the short-hand writer—to whom a knowledge of where vowels are, and where they are not, is practically sufficient—is put to no inconvenience, as he derives this knowledge independently of vowel symbols.

107. The *sixteen* varieties of English simple and compound vowels are represented by *nine* marks, seven of which denote two sounds each, by being placed at the *top* or the *bottom* of the articulation. The other two stand each for one sound only (*ah* and *oil*) and are placed at the *middle* of the articulation. A quantitative distinction may be made in writing the variable vowels in *ĕll* and *ēre*, *ŭp* and *ūrn*, *ŏn* and *all*, *pŭll* and *pōōl*, by making the symbol *thin* for the *short*, and *thick* for the *long* sound.

108. TABLE OF ENGLISH VOWEL SYMBOLS.

Written at							
Top.	eel.	ale, an	err,	on, old, all,	isle,		
	•	—	|	=	ah,	○	∪	∩	< oil. >
Bottom.	ill,	ell, ere,	ask.	up, urn,	ore,	pull, pool,	owl.

109. I.—Vowels pronounced *before* an articulation are written at its *left* side, or, if it is a horizontal character, *above* it: and those pronounced *after* are placed on the *right* side, or *under*.

II.—The upper part of a letter, *as it stands on the page*, is reckoned the top, whether it may have been written upwards or downwards.

III.—The *left* end of horizontal characters is reckoned the *top*.

IV.—Vowels *before* repeaters should be placed *above* them, and those pronounced *after* should be placed *below* them.

The following words illustrate these rules:—

epitaph, appetite, satiety, Isaiah, Eeaias, loyally,**

CONCLUDING OBSERVATIONS.

110. It is probable that many learners of this system may not have been able practically to keep pace with our development of it: the earlier lessons may still require practice; and, as it would be unwise to advance a single step prematurely, the learner should patiently work out the rudimental lessons, until accuracy of phonetic analysis and notation is perfectly attained. *Facility* will be the certain result of exercise. Aim solely at *neatness* and *accuracy* till these have become a habit. Rapidity will not fail to follow.

111. It is possible, also, that many persons may have deferred commencing a regular prosecution of the study until they saw *the end* before them. This is but natural. Let them now go on with diligence: the whole system is in their hands.

112. There are so many systems of shorthand now before the public, that indecision as to which to choose may well be, for a time, almost a matter of course. Each has its warm advocates among the number of those who practise it; and a new system, till it raises up friends of this description, is apt less to be judged by its merits, than to be misunderstood, or at once condemned, by prejudice in favour of that system which happens to have been acquired by its critics. Thus the old alphabet orthography has still its partisans, notwithstanding the manifest superiority of a phonetic foundation for shorthand writing.

113. To those who have already attained facility in the use of any other system, we say nothing of the comparative advantages of this: let them hold to that which they know. But to those who have not yet commenced, or who have but commenced, we would point out the characteristics that make this system *simple in the acquisition, and perspicuous in the use, far beyond any other that can offer them a corresponding amount of brevity*.

114. There is, as most of our readers may know, a system of phonetic short-hand which has been before the public for many years, and which is a great improvement on the old alphabetic methods, in point of brevity and legibility. It was in the course of an attempt to use this system for a strictly scientific notation of spoken sounds that, discovering in it several phonetic defects and inconsistencies which unfitted it for that purpose, we were led to construct a new scheme, that should exhibit the analogies of the elements of speech with greater accuracy, and with less complexity of detail. Some years of experiment, and the practical experience acquired in communicating the system to others, have led to its gradual perfection, and it is now presented to the readers of the POPULAR EDUCATOR, challenging comparison with the older "Phonography," and claiming to be, in point of *philosophical simplicity, greatly superior*; in *brevity, at least equal*; and in *perspicuity and easy legibility, unrivalled by any system of short-hand that has ever been published*.

115. This practical result has followed courses of lessons given by the author, that pupils have been able to *write correctly*,—slowly, of course, but *with all the abbreviations*,—and to *decipher the short-hand with certainty* and tolerable promptitude, after a single course of six lessons—in some instances after only *four lessons*.

116. The following comparative table of PRINCIPLES AND POINTS TO BE REMEMBERED in PITMAN'S "Phonography" and BELL'S Phonetic Shorthand or "Steno-Phonography" will substantiate our assertions with reference to the rudimental simplicity of the latter system.

COMPARATIVE VIEW OF PRINCIPLES AND POINTS TO BE REMEMBERED IN BELL'S PHONETIC SHORT-HAND AND PITMAN'S PHONOGRAPHY.

Principles.	*Pitman.*	*Bell.*
I. Voice letters represented by thick lines.	With various exceptions.	With *no* exceptions.
II. Breath letters represented by thin lines.		
III. Letters, simple and compound, symbolized as *pairs* of voice and breath, between which no such relation subsists.	Six pairs.	None.
IV. Letters symbolized as pairs of voice and breath, between which the *reverse* relation subsists.	One pair.	None.
V. Contracted letters indicate	The addition of *t* or *d* (with several exceptions).	That no vowel precedes (with *no* exceptions)
VI. Vowel points *require* to be inserted to secure legibility,	Whether initial, medial, or final; and whether single or double.	Only when *final* or *double*.
VII. Words containing the same letters are contradistinguished without vowel points:	Only by arbitrary difference of *position*, above, below, or on a line; or by fixed *peculiarities in the mode of writing*.	By the *fundamental principle of writing*, and without any special act of memory.
VIII. Subordinate grammatical classes of words distinguished from leading words:	Undistinguished.	By the *absence of full-sized characters*, and by *grouping*.
IX. Logograms and arbitrarily abbreviated words distinguished from fully written words.	Undistinguished.	By the *absence of full-sized characters*, and by *segregation*.

POINTS TO BE REMEMBERED IN THE ORDINARY UNCONTRACTED WRITING, OF ARTICULATIONS.

	Pitman.	*Bell.*
Number of elementary symbols	27	26
Additional symbols for compound articulations	10	0
Additional symbol for *repetition* of any articulation	0	1
Distinctive sizes of alphabetic characters ...	3	2
Variable values of alphabetic symbols, as written upwards or downwards	2	0
Variable values of enclitic symbols (hooks, rings, &c.), as written to right or left, at top or at bottom	14	4
Variable values of "repeater," as applying to single letters or combinations ...	0	2
Carried over	56	35

* The vowel-mark points *towards* the articulation for "isle-owl," and *from* it for "oil."

	Pitman	Bell.
Brought forward	66	35
Arbitrary appropriation of alphabetic forms to other sounds	4	0
Rules for applying *hooks*	9	1
Distinctive sizes of hooks	2	1
Rules for applying *loops*	4	2
Distinctive sizes of loops	2	1
Rules for applying *rings*	6	2
Distinctive sizes of rings	2	1
	85	43

VOWELS.—(*Scientific Notation*).

Number of English vowel sounds represented ...	13	16
Varieties of English sound *un*represented ...	3	0
Sounds of identical "*quality*," but different "*quantity*," correctly symbolized as *pairs* of "long" and "short" vowels	2	4
Sounds of different quality *unphonetically* represented as quantitative pairs	8	0
Number of true quantitative pairs that *might*, for scientific purposes, be represented by writing the symbols dark or light	5	16

POINTS TO BE REMEMBERED IN THE FULL NOTATION OF VOWELS.

Number of simple characters	6	9
Number of distinctive positions in which the marks require to be placed	3	2
Rules for the placing of vowels	9	1
Aggregate of vowels	18	12
Aggregate of articulations ...	85	43
Comparative total of points to be remembered...	103	55

117. VOWELS being *implied in the "articulate skeleton" in Bell's system*, and separate vowel marks being thus unnecessary, the comparative simplicity of Bell's over Pitman's shorthand is even greater than these numbers indicate. THE LATTER IS, TO THE LEARNER, AT LEAST TWICE AS DIFFICULT AS THE FORMER.

LESSONS IN ENGLISH.—No. XLIV.

By JOHN R. BEARD, D.D.

GENDER.

WORDS are said to undergo inflexion when they are capable of appearing in different forms according to variations in the sense. Inflexion, then, is the general term which denotes this capability. And "the inflexions" is a phrase used to signify the changes themselves which the words capable of inflexion undergo.

These remarks imply that some words are capable, and that other words are not capable of inflexion. *John* is a word capable of inflexion, for *John* may become *John's*. But *with* is a term which remains ever the same, and consequently is incapable of inflexion.

Inflexion (from the Latin *in*, *upon*, and flecto, *I bend*) is a word of Roman origin, signifying *a bending*, that is, a deviation, and so denotes the deviations or departures of words from their root-form or condition. In the Latin language inflexion is a marked feature, and involves many important changes. In English its prevalence is small. In general, the variations and rules of English grammar are somewhat indefinite, undetermined, and variable, wanting the prominence, the fixedness, and the sharp distinctions found in the Latin and the Greek. Some sort of remedy has been sought for in the application to English of the terms, the definitions, and even the laws of classical grammar. The effect has been to augment the trouble of the student, and to conceal or even destroy the natural simplicity of our vernacular tongue. Every language has facts and laws of its own. These it is the business of the philosophical grammarian to collect, systematise, and expound. The Latin grammar is one thing, the Saxon grammar is another, and the English is different from both. Let every language be studied in its own elements; let every grammar be an exposition of the laws of the language which it professes to explain. In grammar let there not be, as there was at Babel, a confusion of tongues. The usages of one language may throw light upon another, but the laws of the Greek must not be thrust on the observance of the student of English. Every language resembles an independent commonwealth, and, as such, is and must be governed by its own laws, and owes obedience solely to one supreme authority—that is, the usages and customs of its best authors.

In order the more exactly and clearly to understand what inflexion is, study these examples:—

John	reads	a	book.
I	read	an	epistle.
We	read	John's	books.

I will now present these words to you arranged so as to show severally their inflexions,

John	reads	a	look	I
John's	read	an	books	we

In each of these five pairs of words there is, you see, a difference; thus, *John* becomes *John's*, *reads* becomes *read*, *a* becomes *an*, *book* becomes *books* and *I* becomes *we*. Here, then, are five classes of words, which, admitting of variations, are capable of inflexion; these classes are the noun proper, the noun common, the verb, the article, and the personal pronoun.

Nouns are affected by inflexion in gender, number, and case. I shall speak of gender in the first place.

Gender is a distinction of nouns in regard to sex. As there are two sexes, the male and the female, so properly there are but two genders, for gender is simply the grammatical term for that which in physiology is termed sex. Accordingly, the very term neuter, as in what is called the third or neuter gender, signifies *neither*, so that *neuter gender* is properly the gender which is *neither* masculine nor feminine. Hence things without life being neither male nor female, are said to be in the neuter gender.

THE GENDERS KNOWN FROM THE SEXES.

Sex.	Male	Female	Without life
Gender.	Masculine	Feminine	Neuter

Compare together these words,

	1	2	3	4
Masculine.	Man	Husband	Lord	Heir
Feminine.	Woman	Wife	Lady	Heiress

and you will not only see what gender means, but learn also how gender in English is denoted; in number one, the feminine is indicated by a change at the beginning of the word, for *man* is made into *woman*; in number four, the feminine is indicated by a change at the end of the word, for *heir* is made into *heiress*; while in number two, the feminine is indicated by a different word. By a different word also is the feminine in number three indicated in appearance;—but in appearance only, for *lady* (Anglo Saxon hæfdie, old Scotch leuedi) is merely the feminine form of the Anglo-Saxon word hlaford, which is our *lord*, signifying master or proprietor.

Gender is marked in various ways. The primitive way of denoting difference of sex is probably the employment of one word for the male and another for the female; this usage seems most in conformity with the simplicity which is an essential characteristic of the English language, e. g.:—

1. SEX SIGNIFIED BY DIFFERENT TERMS.

Masculine.	*Feminine.*	*Masculine.*	*Feminine*
Bachelor	maid (maiden, spinster)	Gentleman	lady
Boy	girl	Hart (buck)	doe
Bridegroom	bride	Horse (stallion)	mare
Brother	sister	Husband	wife
Buck	doe	Monk	nun
Bull	cow	Milter	spawner
Bullock (steer)	heifer	Ox	cow
Cock	hen	Ram	ewe
Colt	filly	Sir	madam
Dog	bitch	Sire	dam
Drake	duck	Son	daughter
Drone	bee	Stag	hind
Earl	countess	Steer	heifer
Father	mother	Uncle	aunt
Friar	nun	Wether	sheep

Geistliche, *m.* -n, pl. -n, clergyman.
Gerber, *m.* -s, pl. -, currier.
Glaser, *m* -s pl. -, glazier.
Goldschmied, *m.* -es, -s, pl. -e, goldsmith.
Handschuhmacher *m.* -s, pl. -, glover.
Heischer. *m.* -s, pl. -, butcher.
Hirt, *m.* -en, pl -en, herdsman.
Hufschmied, *m.* -es, -s, pl. -e, farrier.
Juwelier, *m.* -es, -s, pl. -e jeweller.
Köhler, *m.* -s, pl. -, collier.
Küfer, *m.* -s, pl. -, (See Böttcher.)
Künstler *m.* -s, pl. -, artist.
Kupferschmied, *m.* -es, -s, pl. e, brazier.
Kupferstecher, *m* -s, pl. -, engraver.
Mäher, *m.* -s, pl. - mower.
Marktschreier, *m.* -s, pl. -, quack.
Maurer, *m.* -s, pl. - mason.
Messerschmied, *m.* -es, -s, pl. -e, cutler.
Metzger, *m.* -s, pl. -, (See Fleischer.)
Musikant, *m.* -en pl. -en, musician, fiddler.
Nachtwächter, *m.* -s, pl -, watchman.
Näherin, *f.* -, pl. -nen, seamstress.
Naturforscher, *m* -s, pl. -, naturalist.
Obsthändlerin, *f.* -, pl. -nen, fruitwoman.
Papst, *m.* -es, pl. Päpste, pope.
Perrücken'macher, *m.* -s, pl. -, hairdresser.
Pfar'rer, *m.* -s. pl. -, vicar, parson.
Pferdehändler, *m.* -s, pl. -, horsedealer.
Philosoph', *m.* -en, pl. -en, philosopher.
Pre'diger, *m.* -s, pl. -, preacher.
Priester, *m.* -s, pl. -, priest.
Redner, *m.* -s, pl. -, orator.
Sattler, *m.* -s, pl. -, saddler.
Schauspieler, *m.* -s, pl. -, actor.
Schlosser, *m.* -s, pl. -, locksmith.
Schmied, *m.* -es, -s, pl. -e, smith.
Schneider, *m* -s, pl. -, tailor.
Schorn'steinfeger, *m.* -s, *pl.* -, chimney-sweeper.
Schrift'steller, *m.* -s, pl. -, author.
Schuh'flicker, *m.* -s, pl. -, cobbler.
Schul'lehrer, *m.* -s, pl. -, schoolteacher.
Seiler, *m.* -s, pl. -, rope-maker.
Specerei'händler, *m.* -s, pl. -, grocer.
Stick'erin, *f.* -, pl. -nen, embroideress.
Tag'löhner, *m.* -s, pl. -, day-labourer.
Tapezi'rer, *m.* - s, pl. -, upholsterer.
Tuchhändler, *m.* -s, pl. -, draper.
Uhrmacher, *m.* -s, pl. -, watchmaker.
Wäscherin, *f.* -, -nen, washerwoman.
Weber, *m.* -s, pl. -. weaver.
Wechsler, *m.* -s, pl. -, moneychanger.
Zahnarzt, *m.* -es, pl. -ärzte, dentist
Zuckerbäcker, *m.* -s, pl. -, confectioner.

II. Man. Der Mensch.

Alter, *n.* -s, old age.
Amme, *f.* -, pl. -n, nurse.
Braut, *f.* -, pl. Bräute, bride.
Bräutigam, *m.* -s pl. -e, bridegroom.
Ehefrau, *f.* -, pl. -en, wife.
Ehemann, *m.* -es, -s, pl. -männer, husband.
Enkel, *m.* -s, pl. -, grand-son.
Enkelin, *f.* -, pl. -nen, granddaughter.
Familie, *f.* -, pl. -n family.
Geburt, *f.* -, birth.
Gemahl', *m* -es' -s, pl. -e, } con-
Gemahlin, *f.* -, pl. -nen, } sort.
Großmutter, *f.* -, pl. -mütter, grandmother.
Groß'vater, *m* -s pl. -väter, grandfather.
Jugend, *f.* -, youth.
Jungfrau, *f.* -, pl. -en virgin.
Jüngling, *m.* -s, pl. -e, young man.
Kindheit, *f.* -, childhood, infancy.
Nachkommen, pl. descendants.
Pathe, *m.* -n, pl. -n, godfather.
Pathe, *f.* -, pl. -n, godmother.
Pflege'vater, *m.* -s, pl. -väter, fosterfather.
Schwiegermutter, *f.* -, pl. -mütter, mother-in-law.
Schwiegersohn, *m.* -es, -s, pl. -, söhne, son-in-law.
Schwiegervater, *m.* -s, pl. -väter, father-in-law.
Stief'mutter, *f.* -, pl. -mütter, stepmother.
Stiefsohn, *m.* -es, -s, pl. -söhne, stepson.
Stiefvater, *m.* -s, pl. -väter, stepfather.
Urenkel, *m.* -s, pl. -, great-grandson.
Ur'großvater, *m* -s, pl. -väter, great-grand-father.
Verlo'bung, *f.* -, pl. -en, betrothment.
Vorfahren, pl. ancestors.
Waise, *f.* -, pl. -n, orphan.
Wittwe, *f.* -, pl. -n, widow.
Wittwer, *m.* -s, pl. -, widower.
Zwilling, *m.* -s, pl. -e, twin.

III. The human body. Der menschliche Körper.

Ader, *f.* -, pl. -n, vein.
Arm, *m.* -es, -s, pl. -e, arm.
Augapfel, *m.* -s, pl. -äpfel, eyeball, pupil.
Augenbraune, *f.* -, pl. -n, eyebrow.
Augenlied, *n.* -es, pl. -er, eye-lid.
Augenwimpern, pl. eye-lashes.
Backen, *m* -s, pl. -, cheek.
Backenbart, *m.* -es, -s, pl. -bärte, whiskers.
Bart, *m.* -es, -s, pl. Bärte, beard.
Bein, *n.* -es, -s, pl. -e, leg.
Blut, *n.* -es, -s, blood.
Brust, *f.* -, pl. Brüste, breast.
Busen, *m.* -s, pl. -, bosom.
Daumen, *m.* -s, pl. -, thumb.
Ell'bogen, *m.* -s, pl. -, elbow.
Ferse *f.* -, pl. -n, heel.
Fleisch, *n.* -es, flesh.
Galle, *f.* -, gall.
Gaumen, *m.* -s, pl. -, palate.
Gehirn, *n.* -es, -s, pl. -e, brain.
Gelenk, *n.* -es, -s, pl. -e, joint.
Gerippe, *n.* -s, pl. -, skeleton.
Gesicht, *n.* -es, -s, pl. -e, -er, sight.
Gesichts'punkt, *m.* -es, -s, pl. -züge, lineament, feature.
Glied, *n.* -es, -s, pl. -er, limb, member.
Hals, *m.* -es, pl. Hälse, neck.
Haut, *f.* -, pl. Häute, skin.
Herz, *n.* -ens, pl. -en, heart.
Hüfte, *f.* -, pl. -n, hip.
Kehle, *f.* -, pl. -n, throat.
Knie, *n.* -s, pl. Kniee, knee.
Knochen, *m.* -s, pl. -, bone.
Körper, *m.* -s, pl. -, body.
Leber, *f.* -, pl. -n, liver.
Lippe, *f.* -, pl. -n, lip.
Lunge, *f.* -, pl. -n, lungs.
Magen, *m.* -s, pl. -, stomach.
Mark, *n.* -es, -s, marrow.
Milz, *f.* pl. -en, spleen.
Mund, *m.* -es, -s pl. Münder, mouth.
Muskel, *f.* -, pl. -n, muscle.
Nacken, *m.* -s, pl. -, nape.
Nagel, *m.* -s, pl. Nägel. nail.
Nase, *f.* -, pl. -n, nose.
Nerv, *m.* -en, pl. -en, nerve.
Nieren, pl. -, loins.
Rippe, *f.* -, pl. -n. rib.
Rückgrat, *m.* & *n.* -es, -s, pl -e, spine.
Schädel, *m.* -s, pl. -, skull.
Schenkel, *m.* -s, pl. -, thigh.
Schlaf, *m.* -es, -s, pl. Schläfe, temple.
Schlag'ader, *f.* pl-, . -n, artery.
Schulter, *f.* -, pl. -n, shoulder.
Seite, *f.* -, pl. -n, side.
Stirn, *f.* -, pl. -en, forehead.
Wade, *f.* -, pl. -n, calf.
Wange, *f.* -, pl. -n, cheek.
Zahnfleisch, *n.* -es, gum.
Zehe, *f.* -, pl. -n, toe.
Zunge, *f.* -, pl. -n, tongue.

IV. Maladies and infirmities. Krankheiten und Gebrechen.

Anfall, *m.* -es, -s, pl. -fälle, fit.
Balsam, *m.* -s, pl. -e, balm.
Blattern, pl. the small pox.
Blindheit, *f.* -, blindness.
Brechmittel, *n.* -s, pl. -, emetic
Fieber, *n.* -s, fever.
Geschwulst', *f.* -, pl. Geschwülste, swelling.
Geschwür, *n.* -es, -s, pl. -e, ulcer.
Gicht, *f.* -, gout.
Heilung, *f.* -, pl. -en, cure.
Heiserkeit, *f.* -, hoarseness.
Husten, *m.* -s, cough.
Kolik, *f.* -, colic.
Krampf, *m.* -es, -s, pl. Krämpfe, cramp.
Krebs, *m.* -es, pl. -e, cancer.
Masern, pl. measles.
Mittel, *n.* -s, pl. -, remedy.
Narbe, *f.* -, pl. -n, scar.
Nervenfieber, *n.* -s, nervous-fever.
Ohnmacht, *f.* -, fainting.
Pocken, pl. (See Blattern.)
Quetschung, *f.* -, pl. -en, contusion.
Recept, *n.* -es, -s, pl. -e. prescription.
Salbe, *f.* -, pl. -n, salve.
Scharlachfieber, *n.* -s, scarletfever
Schielen, *n.* -s, squinting.
Schnupfen, *m.* -s, cold.
Schwindel, *m.* -s, dizziness.
Schwindsucht, *f.* -, consumption
Stammeln, *n.* -s, stammering
Stummheit, *f.* -, dumbness.
Sucht, die fallende, epilepsy.
Taubheit, *f.* -, deafness.
Uebelkeit, *f.* -, nausea.
Unpäßlichkeit, *f.* -, pl. -en, indisposition.
Verrenkung, *f.* -, pl. -en, dislocation.
Wassersucht, *f.* -, dropsy.
Wunde, *f.* -, pl. -n, wound.

V. Articles of dress. Kleidungsstücke.

Aermel, *m.* -s, pl. -, sleeve.
Armband, *n.* -es, -s, pl. -bänder, bracelet.
Atlas, *m.* -sses, pl. -sse, satin.
Barchent, *m.* -s, pl. -e, dimity.
Batist' *m.* -es, pl. -e, cambric.
Baumwolle, *f.* -, cotton.
Beinkleider, pl. pantaloons
Besatz, *m.* -es, pl. -sätze, trimming.
Beutel, *m* -s, pl. -, purse, bag.
Brille, *f.* -, pl. -n, spectacles.
Brustnadel, *f.* -, pl. -, brooch.
Bürste, *f.* -, pl. -n, brush.
Degen, *m.* -s, pl. -, sword.
Diamant, *m.* -en, pl. -en, diamond.
Elfenbein, *n.* -es, -s, ivory.
Fächer, *m.* -s, pl. -, fan.
Flor, *m.* -es, -s, pl. Flöre, crape.
Frack, *m.* -es, -s, pl. Fräcke, dress coat.
Franse, *f.* -, pl. -e, fringe.
Futter, *n.* -s, lining.
Geschmeide, *n.* -s, jewellery.
Granat, *m.* -en, pl. -en, garnet.
Gürtel, *m.* -s pl. -, sash.
Haarnadel, *f* -, pl. -n, hair-pin
Halsband, *n.* -es, -s, pl. -bänder neck-lace.
Halstuch, *n.* -es, -s, pl. -tücher, neck-cloth.
Haube, *f* -, pl. -n, cap.
Hemd, *n.* -es, -s, pl. -en, shirt.
Hosen, pl. breeches.

POLYNESIA.

BOUNDARIES.

NORTH: North Pacific.
SOUTH: South Pacific.
EAST: The Pacific.
WEST: The Pacific.

DIVISIONS, or PRINCIPAL GROUPS.

(*The chief towns of those islands in the different groups which have any settlements, are marked in italics.*)

THE NEW ZEALAND ISLANDS.

North Island or New Ulster (*Wellington*), Middle Island or Munster (*Nelson*), and South Island or New Leinster.

THE AUCKLAND ISLANDS.

Auckland (*Port Ross*).

THE CHATHAM ISLANDS.

THE SANDWICH ISLANDS.

Hawaii (*Laheina*), Oahu (*Honolulu*), Mani, Kaui or Atooi, Molokai, Kaheolawe, Lanai, Oneehow, and others.

THE CAROLINE ISLANDS.

Hogoleu, Yap, Oualan Poupinet, Ulea, Lamourzek, Oulimirak, and others.

THE LADRONE ISLANDS.

Guahan (*Agrigan*), Rota, Tinian, Saypan, and others.

THE PELEW ISLANDS.

Babel-thu-up, Pellelew, Emungs, Coror, Oroolong, &c.

THE FEJEE ISLANDS.

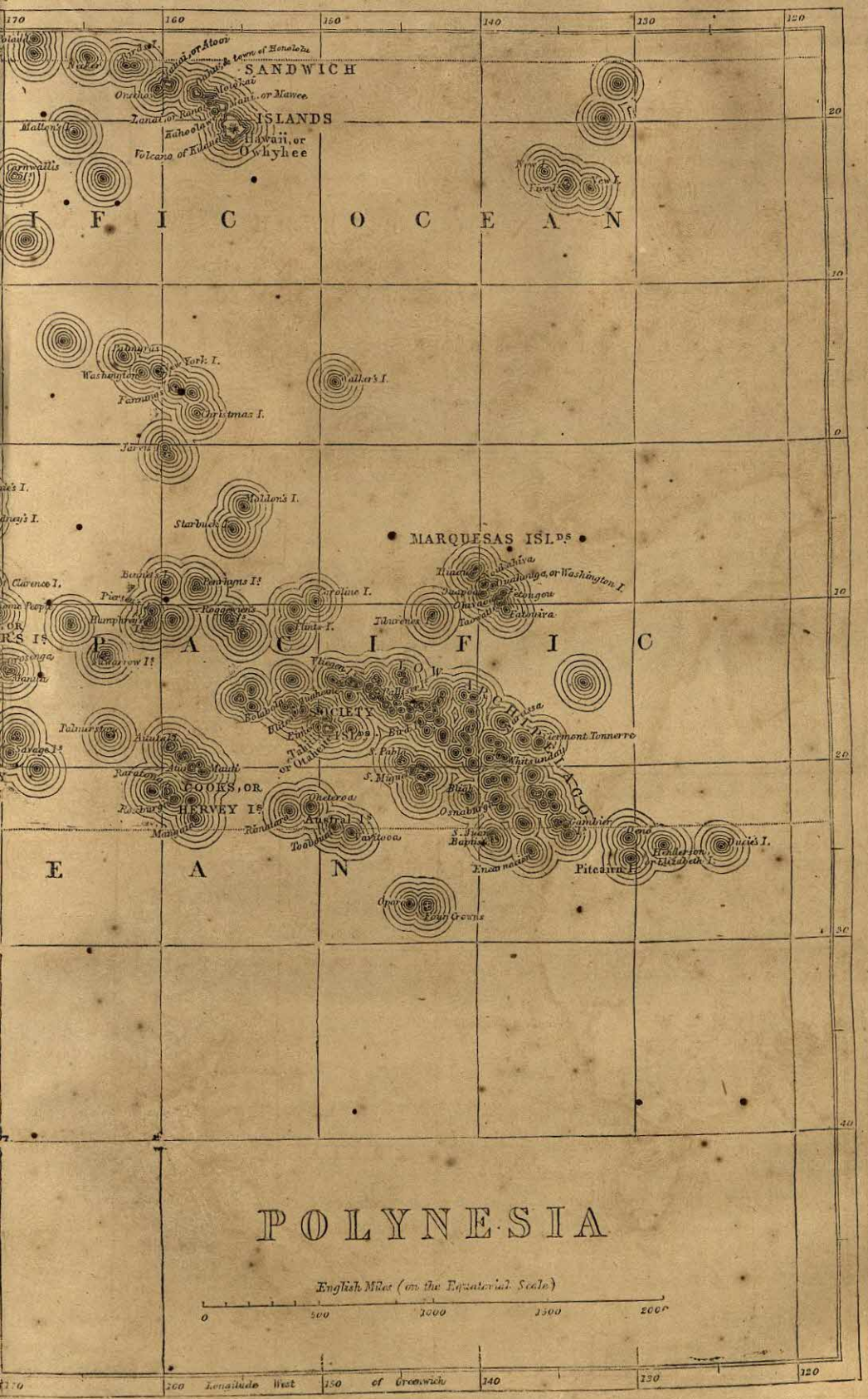
Paau or Tacanova, Ambow, Mywolla, Nawihi, Lewu, &c.

THE FRIENDLY ISLANDS.

Tongataboo, Eoua, Anamouka, Tofoa, Lefouga, Vavaoo, and others.

THE SAMOA ISLANDS.

Savii or Pola, Manono, Opolu, Maouna, Manua, and others.


SANDWICH
ISLANDS
Hawaii, or
Owhyhee
Volcano of Kilauea
Mowee
Morotai
Tahoolaa
Ranai or Atooi
Oneeheow
Mallow's I.
Cornwallis
I. Gal.
Nortolk I.
Phoenix I.
Vostock I.
Flint I.
Caroline I.
Penrhyns I.
Pleasant I.
Bird I.
Clarence I.
Humphreys I.
Barrow I.
Palmerston I.
Aitutaki
Rarotonga
Mauke
Mauti
Toobouai
Oparo
Easter I.
Sala y Gomez
Ducie's I.
Pitcairn I.
Elizabeth I.
Gambier I.
Serle I.
Clermont Tonnere
Whitsunday I.
Osnaburg
Chatham I.
Bligh I.
Enderby I.
Starbuck I.
Malden's I.
Jarvis I.
Christmas I.
Fanning I.
Washington I.
York I.
Fakarava
Tahuata
Nooaheva
Ohevahoa
Resolution I.
Adventure I.
Tahiti
Eimeo
Huaheine
Ulietea
Otaha
Bolabola
Maitea
Maurua

Hosenträger, *m.* -s, pl -, braces, suspenders.
Kamaschen, pl. gaiters.
Kamm, *m.* -es, -s, pl. Kämme, comb.
Kappe, *f.* -, pl. -n, cap.
Kleid, *n.* -es, -s, pl. -er, dress, gown.
Kopfputz, *m.* -es, head-dress.
Kragen, *m.* -s, pl. -, collar.
Leinwand, *f.* -, linen.
Locke, *f.* -, pl. -en, curl.
Musselin, *m.* -es, -s, pl. -e, muslin.
Mütze, *f.* -, pl. -n, (See Kappe.)
Nadelkissen, *n.* -s, pl. -, pincushion.
Nähnadel, *f.* -, pl. -n, needle.
Oberrock, *m.* -es -s, pl. -röcke, frock-coat.
Ohrring, *m.* -es, -s, pl. -e, earring.
Pelzwerk, *n.* -es, -s, pl. -e, fur.
Perle, *f.* -, pl. -n, pearl.
Pomade, *f.* -, pl. -n, pomatum.
Riechfläschchen, *n.* -s, pl. -, smelling bottle.
Ring, *m.* -es, -s, pl. -e, ring.
Sammet, *m.* -s, pl. -e, velvet.
Schachtel, *f.* -, pl. -n, box.
Scheere, *f.* -, pl. -n, scissors, shears.
Schlafrock, *m.* -es, -s, pl. -röcke, dressing-gown.
Schleier, *m.* -s, pl. -, veil.
Schloß, *n.* -es pl. -Schlösser, clasp.
Schürze, *f.* -, pl. -n, apron.
Seide, *f.* -, pl. -n, silk.
Socke, *f.* -, pl. -n, sock.
Sonnenschirm, *m.* -es, -s, pl. -e, parasol.
Spitzen, pl. laces.
Sporen, *m.* -s, pl. -, spur.
Stecknadel, *f.* -, pl. -n, pin.
Stiefelknecht, *m.* -es, -s, pl. -e, boot-jack.
Strumpf, *m.* -es, -s, pl. Strümpfe, stocking.
Taffet, *m.* -es, -s, pl. -e, taffeta.
Tasche, *f.* -, pl. -n, pocket.
Unterhosen, pl. drawers.
Weste *f.* -, pl. -n, vest.
Wichse, *f.* -, pl. -n, blacking.
Zahnbürste, *f.* -, pl. -n, toothbrush.
Zahnstocher, m -s, pl. -, toothpick.

VI. TOWN AND HOUSE. Die Stadt und das Haus.

Balken, *m.* -s, pl. -, beam.
Bank, *f.* -, pl. -en, bank.
Baumgarten, *m.* -s, pl. -gärten, orchard.
Baumschule, *f.* -, pl. -n, nursery.
Bibliothek, *f.* -, pl. -en, library.
Börse, *f.* -, pl. -n, exchange.
Brett, *n.* -es, -s, pl. -er, plank.
Brücke, *f.* -, pl. -n, bridge
Brunnen, *m.* -s, pl. -, well.
Capelle, *f.* -, pl. -n, chapel.
Caserne, *f.* -, pl. -n, barrack.
Dach, *n.* -es, pl. Dächer, roof.
Dachrinne, *f.* -, pl. -n, gutter, spout
Decke, *f.* -, pl. -n, ceiling.
Dorf, *n.* -es, -s, pl. Dörfer, village.
Erdgeschoß, *n.* -sses, pl. -sse, ground-floor.
Fensterladen, *m.* -s, pl. -läden, window-shutters.
Flecken, *m.* -s, pl. -, borough.
Fußboden, *m.* -s, pl. -böden, floor.
Gasse, *f.* -, pl. -n, lane.
Gefängniß, *n.* -es, pl. -e, prison.
Gewächshaus, *n.* -es, pl. -häuser, green-house.
Gewölbe, *n.* -s, pl. -, vault.
Glockenspiel, *n.* -es, -s, pl. -e, chime.
Gosse, *f.* -, pl. -n, kennel.
Hauptstadt, *f.* -, pl. -, städte, metropolis.
Hecke, *f.* -, pl. -n, hedge.
Hof, *m.* -es, -s, pl. Höfe, court, yard.
Hütte, *f.* -, pl. -n, cottage, hut.
Kalk, *m.* -es, -s, lime.
Kamin, *n.* -es, -s, pl. -e, chimney.
Kammer, *f.* -, pl. -n, chamber.
Keller, *m.* -s, pl. -, cellar.
Kirchhof, *m.* -es, -s, pl. -höfe burying-place.
Kirchspiel, *n.* -es, -s, pl. -e, parish.
Kirchthurm, *m.* -es, -s, pl. -thürme, tower, belfry of a church.
Kloster, *n.* -s, pl. Klöster, convent, cloister.
Küche, *f.* -, pl. -n, kitchen.
Landhaus, *n.* -s, pl -häuser, country-house.
Landstraße, *f.* -, pl. -n, highway.
Mauer, *f.* -, pl. -n, wall.
Meierhof, *m.* -es, -s, pl. -höfe, farm.
Möbeln, pl. furniture.
Mörtel, *m.* -s, mortar.
Münze, *f.* -, pl. -n, mint, coin.
Ofen, *m.* -s, pl. Oefen, stove.
Palast, *m* -es, pl Paläste, palace.
Pflaster, *n.* -s, pavement.
Post, *f.* -, pl. -en, post-office.
Pumpe, *f.* -, pl. -en, pump.
Rathhaus, *n.* -es, pl. -häuser, town-house, council-house.
Riegel, *m.* -s, pl. -, bolt.
Saal, *m.* -es, -s, pl. Säle, saloon.
Sacristei, *f.* -, pl. -en, vestry.
Schauspielhaus, *n.* -es, pl. -häuser, theatre.
Schelle, *f.* -, pl. -n, bell, (small.)
Scheune, *f.* -, pl. -n, granary, barn.
Schlafzimmer, *n.* -s, pl. -, bedroom.
Schloß, *n.* -sses pl. Schlösser, castle, lock.
Schiefer, *m.* -s, pl. -, slate.
Schornstein, *m.* -es, -s, pl. -e, (See Kamin.)
Speicher, *m.* -s, pl. -, loft, garret.
Spital, *n.* -es, -s, pl. -täler hospital.
Stadtthor, *n.* -es, -s, pl. -e, gate, (of a walled town.)
Stadtviertel, *n.* -s, pl. -, quarter of (the) town.
Stall, *m.* -es, -s, pl. Ställe, stable.
Stockwerk, *n.* -es, -s, pl. -e, story.
Stube, *f.* -, pl. -n, chamber.
Treibhaus, *n.* -es, pl. -häuser, hot-house.
Treppengeländer, *n.* -s, pl. -, staircase-rail.
Thurm, *m.* -es, -s, pl. Thürme, tower, steeple.
Umgebungen, pl. environs.
Vorzimmer, *n.* -s, pl. -, ante-chamber.
Vorstadt, *f.* -, pl. -städte, suburb.
Wand, *f.* -, pl. Wände, wall, (of a house.)
Weinberg, *m.* -es, -s, pl. -e, vineyard.
Wiese, *f.* -, pl. -n, meadow.
Zeughaus, *n.* -es, pl -häuser, arsenal.
Ziegel, *m.* -s, pl. -, a brick, tile.
Ziegelstein, *m.* -es, -s, pl. -e, brick.
Zollhaus, *n.* -es, pl. -häuser, custom-house.

LESSONS IN ALGEBRA.—No. III.

ANSWERS TO THE EXERCISES.

THE following are the answers to the Exercises in Addition of Algebra, given in our last lesson, p. 40.

ANSWERS TO EXERCISES FOR PRACTICE.

(1.) $6ab+cd-4m+7$; (2.) $3y-dx+hm+1$; (3.) $abm+bm-5y+x+16$; (4.) $8am+3xy-11$; (5.) $9ahy+13$; (6.) $11ad+xy$; (8.) $by+3(b-a)x+3a$; (9.) $6ax+xy$; (10.) $6b+44cdf-3xy$; (11.) $18a+4ax-5bx+63cx+3bz-17xy$; (12.) $8ab-6bc+4cd-7xy+17mn+18fg-2ax$; (13.) $8abc+25abd+5xyz$; (14.) $3df+4ax+74y+30$; (15.) $55a+68b$; (16.) $7(a+b)$; (17.) $2xy(a+b)$; (18.) $2ax+5aa+3x+3xx$; (19.) $7y+9yy+5xy-6xx$; (20.) $9aaa$; (21.) $7yyyy+12xx$; (22.) $-6(a+b)-12(x-y)-13$; (23.) $4(a-b)+9a(x+y)-6y$; (24.) $15axy+3bcd$; (25.) $17(x+y)-9x(a-b)$; (26.) $15abc+2(x+y)$; (27.) $24xy-6abc+4mn-25a$; (28.) $4a(x+y)+7b(x+y)=(4a+7b)(x+y)$.

ANSWERS TO ADDITIONAL EXERCISES.

(1.) $ax^2+a^2x+xy^2+3by^2+y^3$; (2.) $11a^3-10a^2b-14ab^2+16b^3$; (3.) $10x^3-2x^2+3x-2$; (4.) $2a+2b+2c+2d$; (5.) $a-6f$; (6.) $6y^3$; (7.) $(a+b+c)x^2+(b-c+d)x^2$; (8.) $(m+n+2)z-(n+p+1)z$.

SECTION III.

SUBTRACTION.

ART. 57.—SUBTRACTION *is the finding of the difference between any two quantities or collections of quantities.*

EXERCISE 1.—Charles has $5a$ pears, and James has $3a$ pears. How many more pears has Charles than James?

In this example, we wish to take $3a$ pears from $5a$ pears. But subtraction is denoted by the sign —. Hence the expression $5a-3a$ pears represents the answer. But $5a-3a=2a$ pears; which is the answer.

EXERCISE 2.—A gentleman owns a house valued at £4,500; but he is in debt £800. How much is he worth?

Here we have £4,500−£800 = £3700. Ans.

58. Let us now attend to the *principle* upon which these operations are performed. Let us suppose that you open a book account with your neighbour, and that when cast up, the debtor side, which is considered positive, is £500, and the credit side, which is considered negative, is £300. On balancing the account, you find that he owes you £500−£300=£200. Now, if you take £50 from the *positive* or debtor side, it will have the *same effect on the balance*, as if you added £50 to the *negative* or credit side; on the other hand, if you take £50 from the *negative* or credit side, it will have the same effect on the balance, as if you added £50 to the *positive* or debtor side.

59. In like manner, if, in the expression $12a-5a$, you take $3a$ from $12a$, it will have the same effect on the expression, as if you added $3a$ to $5a$ and retained the negative sign in the sum; thus, $9a-5a$ is the same as $12a-8a$. Again, if in the expression $12a-5a$, you take $3a$ from $5a$, and retain the negative sign in the difference, it will have the same effect on the expression, as if you added $3a$ to $12a$; thus, $12a-2a$, is the same as $15a-5a$.

60. *Hence universally, taking away a positive quantity from an algebraic expression is the same in effect as adding an equal negative quantity; and taking away a negative quantity is the same as adding an equal positive one.*

61. Upon this principle is founded the following

GENERAL RULE FOR SUBTRACTION.

Change the signs of all the quantities to be subtracted, i. e., *of the subtrahend, or suppose them to be changed from + to —, and from — to +; then if the quantities are* ALIKE, *unite the terms as in addition* (Arts. 50, 51); *but, if the quantities are* UNLIKE, *write the terms of the subtrahend after those of the minuend.* (Art. 55.)

OTHERWISE:—Put the quantity to be subtracted in brackets, and write it after the quantity from which it is to be subtracted, with the sign minus between them; then apply the Rules of Addition.

EXAMPLES.

1. From $6a+9b$, take $3a+4b$.

Here, Change the signs of the subtrahend but not those of the minuend thus:—

$6a+9b-3a-4b$. Next reduce these terms, by Art. 53, and you have the answer $3a+5b$.

2. From $16b$, Take $12b$, Answer, $4b$.

3. $14da$, $6da$, $8da$.

4. -28, -16, -12.

5. $-16b$, $-12b$, $-4b$.

6. $-14da$, $-6da$, $-8da$.

7. $16b$, $28b$, $-12b$.

8. $12b$, $16b$, $-4b$.

9. $6da$, $14da$, $-8da$.

10. -16, -28, $+12$.

11. $-12b$, $-16b$, $+4b$.

12. $-6da$, $-14da$, $+8da$.

13. $+16b$, $-12b$, $+28b$.

14. $+14da$, $-6da$, $+36da$.

15. -28, $+16$, -44.

16. $-16b$, $+12b$, $-28b$.

17. $-14da$, $+6da$, $-20da$.

19. From $8ab$, take $6xy$. Ans. $8ab-6xy$.

20. From $6aay$, Take $17ay$, Answer, $-6aay-17ay$.

21. $16aaxx$, $20ax$, $16aaxx-20ax$.

22. $6dd+3d-4dd$, $10dc+2dddd+4dy$, $6dd+3d-4ddd-10dc-2dddd-4dy$.

62. From these examples, it will be seen that the *difference* between a positive and a negative quantity may be *greater* than either of the two quantities. In a thermometer, the difference between 28 degrees above zero, and 16 degrees below, is 44 degrees. The difference between gaining 1000 pounds in trade, and losing 500 pounds, is equivalent to 1500 pounds.

63. PROOF.—Subtraction may be *proved*, as in arithmetic, by adding the remainder to the subtrahend. The sum ought to be equal to the minuend, upon the obvious principle, that the difference of two quantities added to one of them, is equal to the other.

23. From $2xy-1$ Subtract $-xy+7$.

Operation. Here, Minuend $2xy-1$, Subtrahend $-xy+7$, Remainder $3xy-8$.

Proof. Add $-xy+7$ Subtrahend. To $3xy-8$ Remainder. $2xy-1$ Minuend.

24. From $h+3bx$, Take $3h-9bx$, Answer $-2h+12bx$.

25. $hy-ah$, $5hy-6ah$, $-4hy+5ah$.

26. $nd-7by$, $5nd-by$, $-4nd-6by$.

27. $3abm-xy$, $-7abm+6xy$, $10abm-7xy$.

28. $-17+4ax$, $-20-ax$, $+3+5ax$.

29. $ax+7b$, $-4ax+15b$, $+5ax-8b$.

30. $3ah+axy$, $-7ah+axy$, $+10ah$ *.

64. When there are several *terms alike* in the subtrahend, they may be united and their sum be used. Thus,

31. From ab, subtract $3am+am+7am+2am+6am$.

Here $ab-3am-am-7am-2am-6am=ab-19am$. Answer.

32. From y, subtract $a-a-a-a$. Answer $y-4a$.

33. From $ax-bc+3ax+7bc$, subtract $4bc-2ax+bc+4ax$.

34. From $ad+3dc-bx$, subtract $3ad+7bx-dc+ad$.

65. The sign —, placed before the marks of *parenthesis* which include a number of quantities, requires, that when these marks are removed, the signs of *all* the quantities thus included should be changed. Thus $a-(b-c+d)$ signifies that the quantities $b-c$ and $+d$, are to be subtracted from a. Remove the *parenthesis* and the expression will then become $a-b+c-d$, an expression which has exactly the same meaning as the former.

35. From $xy+d$, take $7ad-xy+d+hm$. Here, $xy+d-(7ad-xy+d+hm)=-7ad+2xy-hm$. Answer.

66. On the other hand, when a number of quantities are to be introduced within the marks of parenthesis, with — immediately preceding it, their signs must be changed. Thus, $-m+b-dx+3h=-(m-b+dx-3h)$.

EXAMPLES FOR PRACTICE.

1. From $6ab+7xy+18dfg$, take $3xy+4ab+8dfg$.
2. From $-35ax-21ab-37m$, take $-30m-15ab-10ax$.
3. From $9ay+19bx+22bc$, take $12ay+31bc+50bx$.
4. From $8xy-10ab+6d$, take $-12ab+10d+24xy$.
5. From $7a+6x+df+xyz$, take $3x-4a-3df-17xyz$.
6. From $18bc-xy+22gh$, take $41xy-gh+bc$.
7. From $21ax+y+ac-ay$, take $4a-bc+x-yz-dc$.
8. From $21x+40xy-13a$, take $42+10ab-5bc$.
9. From $5xy$, take $2ab+30ab+ab-4ab$.
10. From $5ax+16ay$, take $4ax-ay+3ax+4ay$.
11. From $a+b$, take $-(c+d-f+g-h-xy)$.
12. From $7ab+16xy-7ad$, take $-(6ab-12xy+ad)$.
13. Introduce the following quantities within a parenthesis with — immediately preceding, without altering their value; viz. $-a+b-c-d+f+gh$.
14. Also, $ab-cdx+df-x-y+ghf-bc+xyz$.
15. From $4xx+6bbb$, take $3xx+4bbb$.
16. From $20yy-2y+12aaa$, take $15yy-2y-12aaa$.
17. From $-8(a+b)+10(x+y)$, take $2(a+b)-6(x+y)$.
18. From $4(a+b)-16(x-y)$, take $17(a+b)+36(x-y)$.
19. From $2a-aa+ba$, take $a-4aa-6ba$.
20. From $xx+3x-xxx$, take $2x+3xx+10xxx$.
21. From $18-25ab+20x+3y$, take $3x+3y-25ab+1$.
22. From $6(a-y)-17(a+y)$, take $3(a+y)-7(a-y)$.
23. From $ax-xy-my-6$, take $6ax-6xy-ay+46-7df$.
24. From $66a-4b$, take $20a-b-30a-16a-3b+5a$.

ADDITIONAL EXERCISES.

1. From $6x^4z^2-a^6$, take $2x^4z^2-b^6$.
2. From $x^4+4x^3y+6x^2y^2+4xy^3+y^4$, take $x^4-4x^3y+6x^2y^2-4xy^3+y^4$.
3. From $4a^3-8a^4+16a^5$, take $3a^3-4a^4+5a^5$.
4. From $a+b+c$, take $-a+b+c$.
5. From $4a^3-3a^2x+ax^2-2x^3$, take $2a^3-4a^2x-ax^2-x^3$.
6. Take x^3-3x^2+3x-1 from x^3+3x^2+3x+1.
7. From ax^2+by^2 take cx^2-dy^2.

LESSONS IN FRENCH.—No. LVII.

By Professor LOUIS FASQUELLE, LL.D.

§ 49.—REMARKS ON THE PECULIARITIES OF SOME VERBS OF THE FIRST CONJUGATION.

(1.) In verbs ending in *ger*, in order to retain the soft pronunciation of the *g*, the *e* of the infinitive is preserved, whenever the *g* would come before *a*, or *o*:—

Nous mangeons,	*we eat*;	instead of	*nous mangons*;
Je mangeai,	*I did eat*;	"	*je mangai*;
Jugeant,	*judging*;	"	*jugant*

(2.) In verbs ending in *yer*, the *y* is changed into *i*, before *e*, *es*, *ent*, and *e* (*not accented*), followed by *r*, and one or more vowels:—

Je paie,	*I pay*;	instead of	*je paye*;
Ils essaient,	*they try*;	"	*ils essayent*;
Je paierai,	*I will pay*;	"	*je payerai*.

(3.) In verbs terminating in *cer*,† in order to preserve its soft pronunciation, a cedilla (ç) is put under the *c* when it comes before *a* or *o*:—

† This rule applies also to *o* and *u* in verbs of the third conjugation, ending in *evoir*, Je reçois, *I receive*; J'aperçois, *I perceive*.

Commençant,	*commencing*;	instead of	*commencant*;
Nous plaçons,	*we place*;	"	*nous placons.*

(4.) In verbs ending in *eter* and *eler*, the *t* or *l* of the infinitive is doubled, when it comes before *e*, *es*, *ent* and *e* (*not accented*), followed by *r*, and one or more vowels:—

J'appelle,	*I call*;	instead of	*j'appele*;
Je jetterai,	*I will throw*;	"	*je jeterai*;
J'appellerais,	*I would call*;	"	*j'appelerais.*

(5.) The following verbs form exceptions to the last rule:—

Acheter,	*to buy*;	Décolleter,	*to uncover the throat*;
Bourreler,	*to torment*;	Etiqueter,	*to ticket*;
Congeler,	*to congeal*;	Geler,	*to freeze*;
Colleter,	*to collar*;	Harceler,	*to teaze*;
Cequeter,	*to coquet*;	Peler,	*to peel*;
Déceler,	*to detect*;	Suracheter,	*to pay dear for*;
Dégeler,	*to thaw*;		

In the above verbs, when the *t* or *l* comes before *e*, *es*, *ent*, or *e* (*not accented*) followed by *r* and one or more vowels, a grave accent (`) is put over the *e* which precedes the *t* or *l*:—

Je pèle,	*I peel*;	Je pèlerai,	*I will peel*;
J'achète,	*I buy*;	J'achèterai,	*I will buy.*

(6.) A grave accent is also used in verbs ending in

ecer, emer, ener, ever:

and the acute accent of the infinitive of those ending in

écer,	égler,	éler,	érer,
ébrer,	égner,	émer,	éter,
écher,	égrer,	éner,	étrer,
éder.	éguer,	équer,	

is changed into a grave one, when the consonant following the first *e* of these terminations comes before *e*, *es*, *ent*, and *e* (*not accented*) followed by *r* and one or more vowels:—

Je sème,	*I sow*,	Je mène,	*I lead*;
Je célèbrerai,	*I will celebrate*;	Il règnera,	*he will reign.*

(7.) In the tables of peculiar, irregular, defective, and unipersonal verbs, we will place a model verb of each class embraced in the preceding remarks, and also include in the same table the names of the principal verbs coming under these remarks, with references to the models.

§ 50.—Regular Verbs.—Continued.

SECOND CONJUGATION,—ENDING IN *IR*.

Model verb.

FINIR, *TO FINISH.*

Indicative Mode.

SIMPLE TENSES.		COMPOUND TENSES.	
PRESENT.		PAST INDEFINITE.	
Je finis,	*I finish*	J'ai fini,	*I have finished*
Tu finis,	*thou finishest*	Tu as fini,	*thou hast finished*
Il finit,	*he finishes*	Il a fini,	*he has finished*
On finit,	*one finishes*	On a fini,	*one has finished*
Nous finissons,	*we finish*	Nous avons fini,	*we have finished*
Vous finissez,	*you finish*	Vous avez fini,	*you have finished*
Ils finissent,	*they finish*	Ils ont fini,	*they have finished*
IMPERFECT.		PLUPERFECT.	
Je finissais,	*I was finishing*, or *used to finish*	J'avais fini,	*I had finished*
Tu finissais,	*thou wast finishing*	Tu avais fini,	*thou hadst finished*
Il finissait,	*he was finishing*	Il avait fini,	*he had finished*
On finissait,	*one was finishing*	On avait fini,	*one had finished*
Nous finissions,	*we were finishing*	Nous avions fini,	*we had finished*
Vous finissiez,	*you were finishing*	Vous aviez fini,	*you had finished*
Ils finissaient,	*they were finishing*	Ils avaient fini,	*they had finished*
PAST DEFINITE.		PAST ANTERIOR.	
Je finis,	*I finished, did finish*	J'eus fini,	*I had finished*
Tu finis,	*thou didst finish*	Tu eus fini,	*thou hadst finished*
Il finit,	*he finished*	Il eut fini,	*he had finished*
On finit,	*one did finish*	On eut fini,	*one had finished*
Nous finîmes,	*we finished*	Nous eûmes fini,	*we had finished*
Vous finîtes,	*you finished*	Vous eûtes fini,	*you had finished*
Ils finirent,	*they finished*	Ils eurent fini,	*they had finished*
FUTURE.		FUTUR ANTERIOR.	
Je finirai,	*I shall finish*	J'aurai fini,	*I shall have*
Tu finiras,	*thou wilt finish*	Tu auras fini,	*thou wilt have*
Il finira,	*he will finish*	Il aura fini,	*he shall have*
On finira,	*one will finish*	On aura fini,	*one will have*
Nous finirons,	*we shall finish*	Nous aurons fini,	*we shall have*
Vous finirez,	*you will finish*	Vous aurez fini,	*you will have*
Ils finiront,	*they will finish*	Ils auront fini,	*they shall have*

finished

Conditional Mode.

PRESENT.		PAST.	
Je finirais,	*I would finish*	J'aurais fini,	*I should*
Tu finirais,	*thou shouldst finish*	Tu aurais fini,	*thou wouldst*
Il finirait,	*he would finish*	Il aurait fini,	*he might*
On finirait,	*one might finish*	On aurait fini,	*one should*
Nous finirions,	*we would finish*	Nous aurions fini,	*we would*
Vous finiriez,	*you might finish*	Vous auriez fini,	*you might*
Ils finiraient,	*they should finish*	Ils auraient fini,	*they should*

have finished

Imperative Mode.

Finis,	*finish thou*
Qu'il finisse,	*let him finish*
Qu'on finisse,	*let one finish*
Finissons,	*let us finish*
Finissez,	*finish ye* or *you*
Qu'ils finissent,	*let him finish*

Subjunctive Mode.

PRESENT.		PAST.	
Que je finisse,	*that I may*	Que j'aie fini,	*that I may*
Que tu finisses,	*that thou mayest*	Que tu aies fini,	*that thou mayest*
Qu'il finisse,	*that he may*	Qu'il ait fini,	*that he may*
Qu'on finisse,	*that one may*	Qu'on ait fini,	*that one may*
Que nous finissions,	*that we may*	Que nous ayons fini,	*that we may*
Que vous finissiez,	*that you may*	Que vous ayez fini,	*that you may*
Qu'ils finissent,	*that they may*	Qu'ils aient fini,	*that they may*
IMPERFECT.		PLUPERFECT.	
Que je finisse,	*that I might*	Que j'eusse fini,	*that I might*
Que tu finisses,	*that thou mightest*	Que tu eusses fini,	*that thou mightest*
Qu'il finît,	*that he might*	Qu'il eût fini,	*that he might*
Qu'on finît,	*that one might*	Qu'on eût fini,	*that one might*
Que nous finissions,	*that we might*	Que nous eussions fini,	*that we might*
Que vous finissiez,	*that you might*	Que vous eussiez fini,	*that you might*
Qu'ils finissent,	*that they might*	Qu'ils eussent fini,	*that they might*

finish — *have finished*

Infinitive Mode.

SIMPLE TENSES.		COMPOUND TENSES.	
PRESENT.		PAST.	
Finir,	*to finish*	Avoir fini,	*to have finished*

Participle.

PRESENT.		COMPOUND.	
Finissant,	*finishing*	Ayant fini,	*having finished*

Past or Passive.

Fini, *finished.*

§ 51.—Regular Verbs.—Continued.

THIRD CONJUGATION,—ENDING IN *OIR*.

Model verb.

RECEVOIR, *TO RECEIVE.*

Indicative Mode.

PRESENT.		PAST INDEFINITE.	
Je reçois,	*I receive*	J'ai reçu,	*I have received*
Tu reçois,	*thou receivest*	Tu as reçu,	*thou hast received*
Il reçoit,	*he receives*	Il a reçu,	*he has received*
On reçoit,	*one receives*	On a reçu,	*one has received*
Nous recevons,	*we receive*	Nous avons reçu,	*we have received*
Vous recevez,	*you receive*	Vous avez reçu,	*you have received*
Ils reçoivent,	*they receive*	Ils ont reçu,	*they have received*
IMPERFECT.		PLUPERFECT.	
Je recevais,	*I was receiving*, or *I used to receive*	J'avais reçu,	*I had received or been receiving*
Tu recevais,	*thou wast receiving*	Tu avais reçu,	*thou hadst received*
Il recevait,	*he was receiving*	Il avait reçu,	*he had received*
On recevait,	*one was receiving*	On avait reçu,	*one had received*
Nous recevions,	*we were receiving*	Nous avions reçu,	*we had received*
Vous receviez,	*you were receiving*	Vous aviez reçu,	*you had received*
Ils recevaient,	*they were receiving*	Il avaient reçu,	*they had received*
PAST DEFINITE.		PAST ANTERIOR.	
Je reçus,	*I received* or *did receive*	J'eus reçu,	*I had received*
Tu reçus,	*thou receivedst*	Tu eus reçu,	*thou hadst received*
Il reçut,	*he received*	Il eut reçu,	*he had received*
On reçut,	*one received*	On eut reçu,	*one had received*
Vous reçûmes,	*we received*	Nous eûmes reçu,	*we had received*
Nous reçûtes,	*you received*	Vous eûtes reçu,	*you had received*
Ils reçurent,	*they received*	Ils eurent reçu,	*they had received*

SIMPLE TENSES.		COMPOUND TENSES.	
FUTURE.		FUTURE ANTERIOR.	
Je recevrai,	*I shall receive*	J'aurai reçu,	*I shall have*
Tu recevras,	*thou will receive*	Tu auras reçu,	*thou wilt have*
Il recevra,	*he shall receive*	Il aura reçu,	*he will have*
On recevra,	*one will receive*	On aura reçu,	*one will have*
Nous recevrons,	*we shall receive*	Nous aurons reçu,	*we shall have*
Vous recevrez,	*you will receive*	Vous aurez reçu,	*you will have*
Ils recevront,	*they will receive*	Ils auront reçu,	*they shall have*

receive / *have received*

CONDITIONAL MODE.

PRESENT.		PAST.	
Je recevrais,	*I should receive*	J'aurais reçu,	*I should*
Tu recevrais,	*thou wouldst receive*	Tu aurais reçu,	*thou wouldst*
Il recevrait,	*he should receive*	Il aurait reçu,	*he might*
On recevrait,	*one might receive*	On aurait reçu,	*one would*
Nous recevrions,	*we should receive*	Nous aurions reçu	*we should*
Vous recevriez,	*you might receive*	Vous auriez reçu,	*you might*
Ils recevraient,	*they should receive*	Ils auraient reçu,	*they should*

have received

IMPERATIVE MODE.

Reçois,	*receive thou*
Qu'il reçoive,	*let him receive*
Qu'on reçoive,	*let one receive*
Recevons,	*let us receive*
Recevez,	*receive ye or you*
Qu'ils reçoivent,	*let them receive*

SUBJUNCTIVE MODE.

PRESENT.		PAST.	
Que je reçoive,	*that I may*	Que j'aie reçu,	*that I may*
Que tu reçoives,	*that thou mayest*	Que tu aies reçu,	*that thou mayest*
Qu'il reçoive,	*that he may*	Qu'il ait reçu,	*that he may*
Qu'on reçoive,	*that one may*	Qu'on ait reçu,	*that one may*
Que nous recevions,	*that we may*	Que nous ayons reçu,	*that we may*
Que vous receviez,	*that you may*	Que vous ayez reçu,	*that you may*
Qu'ils reçoivent,	*that they may*	Qu'ils aient reçu,	*that they may*

receive / *have received*

IMPERFECT.		PLUPERFECT.	
Que je reçusse,	*that I might*	Que j'eusse reçu,	*that I might*
Que tu reçusses,	*that thou mightest*	Que tu eusses reçu,	*that thou mightest*
Qu'il reçût,	*that he might*	Qu'il eût reçu,	*that he might*
Qu'on reçût,	*that one might*	Qu'on eût reçu,	*that one might*
Que nous reçussions,	*that we might*	Que nous eussions reçu,	*that we might*
Que vous reçussiez,	*that you might*	Que vous eussiez reçu,	*that you might*
Qu'ils reçussent,	*that they might*	Qu'ils eussent reçu,	*that they might*

receive / *have received*

INFINITIVE MODE.

SIMPLE TENSES.		COMPOUND TENSES.	
PRESENT.		PAST.	
Recevoir,	*to receive*	Avoir reçu,	*to have received*

PARTICIPLE.

PRESENT.		COMPOUND.	
Recevant,	*receiving*	Ayant reçu,	*having received*

PAST OR PASSIVE.

Reçu, *received.*

§ 52.—REMARKS.

(1.) In the verbs of this conjugation, ending with *cevoir*, in order to preserve its soft pronunciation, a cedilla (ç) is put under the *c*, when it comes before *a*, *o*, *u* :—

Je reçois, *I receive;* J'aperçois, *I perceive.*

(2.) There are only seven verbs in this conjugation. They are:—

Apercevoir,	*to perceive;*	Percevoir,	*to collect duties, taxes;*
Concevoir,	*to conceive;*	Recevoir,	*to receive;*
Décevoir,	*to deceive;*	Redevoir,	*to owe again.*
Devoir,	*to owe;*		

A KEY TO THE EXERCISES IN THE LATIN LESSONS.

(Continued from page 59, Vol. III.)

By JOHN R. BEARD, D.D.

Page 140, col. 2, vol. II.—LATIN-ENGLISH.

In all matters, before you approach them, deliberation is necessary; but when you have deliberated, approach the thing itself speedily; Socrates, on the last day of his life, discoursed many things concerning immortality; the fight having begun (hands [manibus] having been joined), our soldiers excelled in bravery; the mind sets in motion that body over which it has been placed; Zeno placed a happy life (beatam vitam) in virtue alone; nature has produced in man a desire to arrive at truth; a love of themselves has been produced by nature in all animals; Alexander, the conqueror of so many kings and peoples, became a slave to anger; I hope that you will always apply yourself to letters with the greatest zeal; men endowed with the greatest intellects, regarded the sanctity of tombs; (there) clung to their minds (an idea) that death is not annihilation blotting out all things, but, as it were, a certain migration of life; death among excellent men and women is the guide to heaven; men endowed with the greatest intellects would not have regarded the sanctity of tombs with so much solicitude, unless (the idea) had clung to their minds that death is not annihilation blotting out all things, but, as it were, a certain migration and change of life, which, among excellent men and women, is wont to be the guide to heaven; if your intellect has been cultivated by arts and letters (litteris), you will be useful both to yourself and others; the leader, in order that the soldiers might not lose courage, concealed the wounds inflicted on himself; who believes that any fault remains hidden from God? the coverings (tegumenta) of the body are either woven or sewed; who has woven that beautiful garment? thy speech seized our attention; Socrates asks (quaerit), whence we got our minds, if there was no mind in the world? the city, taken by the enemies, has been plundered; Scipio fought with Hannibal, who was born almost in the tent of his father, a most valiant leader, and was brought up and educated among weapons; with whom does not that mute place, where he was brought up and taught, tarry with pleasing recollection in the mind? the husbandmen (agricolae) have already not only mowed the wheat, but have even collected it, after being cut down, into barns; Hector himself trembled in his whole breast, when Ajax, with much gaiety, came forward to fight out the quarrel with him.

Page 140, col. 2, vol. II.—ENGLISH-LATIN.

Consulistine patrem? consule tuis liberis; ubi bene consuluerint rem aggrediantur; milites manus conserebant; quis militum in proelio excelluit? Deus animum corpori praeposuit; a sapientibus vita in unâ virtute posita est; felicitatem pono in Dei amore; estne tibi cupiditas verum inveniendi? natura animis talem cupiditatem ingenuit omnibus; et divitibus et pauperibus amor sui ingenitus est; fratres tui irae succubuerunt, et, consertis manibus, pugnaverunt; studio in litteras incumbit; pater meus sperat me in litteras studio incubiturum esse; multas consevit arbores; haeret in hominum mentibus mortem non vitae finem esse; ingenium tuum artibus litterisque excultum est; duces, ne rex animum demitteret, vulnera sibi inflicta occoluerunt; texunt suuntque; vestes textae et sutae sunt; unde animum arripuimus? in Deo est origo animi; Deus omnium rerum est origo; urbs expugnabitur et diripietur; inter arma aitus atque educatus es? ubi agricolae frumentum demessuerint? miles progreditur te oppugnaturus; pater meus progredietur urbem obsessurus; copiae progressi sunt domosque diripiunt; juravit se in proelium ire progressurum esse; urbe expugnatâ, hostes cives interfecerunt.

Page 141, col. 1, vol. II.

Applications of Colo.

1. The steward has been appointed for the sake of tilling the land.
   Not all fields which are tilled are fruit-bearing.
2. Inhabit the city, O my Rufus, and live in that light (distinguished place).
   The men who together with us inhabit these lands.
3. Thou, Jupiter, who carest for and nourishest the race of men.
   Let it be your object, to take care of your breast by noble means.
   Nothing more acceptable (gratius) ever happened to me than that you took care of my Tullia most agreeably (suavissime) and most diligently.
   All things are full of Jupiter, he takes care of the lands.
4. He cultivated the study of philosophy from early youth.
   He studied the liberal arts most diligently.

5. Now clearly I am able to pursue neither that diet nor that way of life.
6. I love you, because you regard me.
   By whom we seem to be carefully regarded and esteemed.
   Which state my brother esteems and loves.
   Friends will not only esteem and love, but will even revere each other.
7. You wish, O Sextus (Sexte), to be respected, I wished to love thee. However you must be obeyed, as you command you are respected. But if I respect you, O Sextus, I shall not love you.
7. What is it you say why the gods should be worshipped by men, when the gods not only do not look upon men, but, indeed, care nothing about them? We ought both to adore and worship these gods.

Page 141, col. 2, vol. II.—LATIN-ENGLISH.

Regard for our body is implanted in us; where there is no sowing, there is no reaping; everything which was gross and corporeal, God made subject to the mind; you have put down the reproaches and hatred of ill-disposed persons by your way of living; the governor, Probus, planted the Golden mountain near Moesia with vines; the battle having begun, all places far and wide were strewn with weapons, armour, and dead bodies; the consciousness of despised virtue torments the wicked man; tell me, why you have despised my counsel; listen, boy, your mother asks you why you have forgotten to eat the buttered bread; he who has defiled himself with foreign manners is displeasing; a word uttered opportunely decided the doubtful affair; loveliness (venustas) and beauty of person are not separated from health; Cato addressed the people; Cato denied that he would allow the Comitia to be held; the Gauls did not allow wine to be at all brought into their country; why have you ceased to read that book? the power of the Thebans, as long as Epaminondas and Pelopidas governed them, increased in a wonderful manner; our friendship grew with our age; we do not doubt that the river which has swollen suddenly is also about to subside suddenly.

Page 141, col. 2, vol. II.—ENGLISH-LATIN.

Insitus est pectore liberorum nostrorum amor; meum consilium spreverunt; consilium meum ab illis spretum est; spernam nullius consilium; mi puer, butyro obline panem; panis meus, mater, butyro oblitus est; non te sequi decrevit; cito decernam quid faciam; se oblinent malis moribus; boni a malis secernendi sunt; pueros secrevi a puellis; a senibus juvenes a te secreti sunt; Cicero concionabitur; consul declarat se Comitia habere siturum esse; Victoriâ regnante, Britanniae potentia, mirum in modum, crevit; amicitia nostra cum aetate crescet; post laborem libens animus quiescit.

Page 158, col. 1, vol. II.—LATIN-ENGLISH.

Many men, accustomed to constant and daily toil, when on account of the weather they are prevented from going out, are delighted by games; Demosthenes was accustomed to pronounce at the top of his voice many verses in one breath; at the suggestion of the fathers (the fathers being the originators) the people took to themselves as king, Numa Pompilius, a foreigner; the Roman people observed with the greatest sanctity the sacred rites of Ceres, adopted from the Greeks; when my mind has rested a little while from business, I will hasten to thee, in whose love and sweetness I hope to find repose and to lay down all my cares and griefs; if you are well acquainted with the character of my friend, I trust you will perceive his innocence and will pardon him; beasts impelled by hunger often return to that place where they have once been fed; take care lest you take the unknown for the known, and assent to it rashly; what is so futile as to approve of anything which has not been examined; the Roman nation grew to such a size that it was overthrown by its own strength; what is so pleasant to read and to hear as an oration adorned with wise and mighty words; the shorter a narration, the clearer and easier to be understood is it; Cato as long as he lived grew in his reputation for virtue; when the nature of all things is known, we shall be freed from superstition (the nature of all things being known, we are freed from superstition)

Page 158, col 1. vol. II.—ENGLISH-LATIN.

Quoad vivam me colere Deum assuefaciam; nihil est tam futile quam incognita pro cognitis habere; pasti boves ad eum locum ubi pasci consueti sunt revertuntur; Anglia ad maximam magnitudinem crevit, crescetque ad majorem; quam jucundum metu levari! de futuris scisce; ignosce filii tui peccatis; haud scio an hujus hominis obtrectationibus ignoscere possim; animus meus in filiolae meae venustate et suavitate conquiescit conquiescetque; me auctore, frater tuus officium deposuit; luxuriem contemnere labore assiduo assuesces; approbat quid dixisti; putasne illum mea facta approbaturum esse? animus meus paululum requievit, nunc ad labores revertar.

Page 158, col. 1, vol. II.—LATIN-ENGLISH.

Men when they have obtained the things which they eagerly desired, often disdain them; did you hear that the lions roared? let the war be so begun that nothing else save peace may seem sought after; when in memory you have traced back all antiquity, you will scarcely find three pairs of friends who were ready to lay down their life for one another; take care you do not decide concerning the matter before you have carefully searched it out; the daughters of Erechtheus eagerly desired death for the life of the citizens; the whole philosophy of the Romans is borrowed from the Greeks; Socrates spent his whole life and years in amending the morals of others; the precepts of virtue, although they are trite and common, yet are observed by few; it is known that Hannibal in the second Punic war wore down the resources of Italy; that importunate man has given me much trouble; I do not doubt that trouble has been caused to the citizens by the new law; if the soldiers had not hastily left the city and taken to flight, the citizens would have fallen upon them with their weapons; scarcely had the enemies challenged our soldiers to the fight, when they took to their arms and fell upon them; we read that the Romans often sent for their consuls from the plough; the Romans piously observed many sacred rites brought and adopted from foreign nations.

Page 158, col. 2, vol. II.—ENGLISH-LATIN.

Quis nescit Hannibalem Romanorum aliquando opes attrivisse? boni mala nunquam petunt; id quod adipiscar fastidiam nunquam; putasne te, pecuniâ acquisi à, non eam fastiditurum esse; cave me contemnas aut fastidias aliquem; arcesse duces ab aratro; ne facesse illi homini bono negotium; mali discipuli praeceptoribus optimis negotium facessunt; in bello pacem petimus; in bello pax a nobis petitur; liberi mei cupide mortem expetiverunt pro vitâ meâ; constat nostros cives in hostem incessuros esse.

Page 159, col. 1, vol. II.—LATIN-ENGLISH.

Let us be disposed towards our friends in the same manner as they are towards us; completed labours are pleasant; virtue alone is in its own power; all things except it are subject to the rule of fortune; one day spent well and according to the precepts of philosophy is to be preferred to a sinful immortality; the consciousness of a well spent life, and the remembrance of many good deeds, are most agreeable; the desires (appetitus) are by a law of nature subject to reason; Xerxes was conquered more by the wisdom of Themistocles, than by the arms of Greece; how much do eighty years spent in indolence delight a man? take care you do not believe that those whom you have conquered are friends to you; we shall indeed be happy when, having left the body, we are without desires; what is so outrageous as the empty sound of the best and most elegant words, when there is no idea involved? if fortune has taken away money from any one, yet, while his reputation is sound, credit easily alleviates his want; the soldiers, having seized their weapons, made an attack upon the enemies, but these hastily took to flight; the enemies having broken the treaty which they had but just made, rushed suddenly into our camp; if any philosopher has done wrong in his course of life, he is so much the more base, because he professes the art of living; Plinius read no book from which he did not make extracts; the citizens subdued by the enemies, having every hope of recovering their liberty removed, passed a wretched life; the soldiers broke through and scattered the enemies' line; the treaties which were made have been broken by the enemies.

Page 159, col. 1, vol II.—ENGLISH-LATIN.

Foedus ictum milites vestri rumpent; hostes perfringent nec iem nostram? hostes nunquam copias nostras disjiciant; improbi miseram vitam transigunt; putasne improbos vitam miseram transigere? rex omnem pacis recuperandae spem ademit; excerpe illum librum; milites nostri, captis armis, impetum facient in hostes; eodem modo erga senes affici volo, quo erga juvenes; religio sola in suâ potestate est; Deo juvante, quicquid placet sibi ea facere potest.

Le meilleur des hommes est celui qui fait du bien aux hommes.

Ce qu'est le salut pour l'autre vie, l'honneur l'est pour celle ci: il est la ressource du sage dans les disgrâces qui lui arrivent.—*Duclos.*

Quelque honte que nous ayons méritée, il est presque toujours en notre pouvoir de rétablir notre réputation.—*La Rochefoucauld.*

Il y a une espèce de honte d'être heureux à la vue de certaines misères.—*La Bruyère.*

Les hommes sont faits comme des oiseaux, qui se laissent toujours prendre dans les mêmes filets, où l'on a déjà pris cent mille oiseaux de leur espèce. Il n'y a personne qui n'entre tout neuf dans la vie, et les sottises des pères sont perdues pour les enfants.—*Idem.*

LESSONS IN MECHANICS.—No. XI.

NAVAL ARCHITECTURE—(*continued*).

CAULKING.

THE next process is that of caulking. As it is impossible to render the planking so perfect as to be thoroughly impenetrable by water, the interstices have to be filled up with oakum. A dense and compact layer of oakum is driven in with a caulking iron between the joints of each plank—the depth of the layer being equal to that of the plank itself: the vessel is thus rendered water-tight, the whole process being completed by stopping up every seam or rent with melted pitch and resin.

SHEATHING AND MASTING.

To cover the bottom of the ship with a sheath of copper, to put in the masts—generally made of Canadian fir—are matters to be seen to after the launching. Masts, except in very small vessels, are not made of a single piece of timber; but are usually formed of three stages or tiers rising one above the other, each having its own distinct name—the lower mast, top-mast, and top-gallant mast. The number of masts vary in different kinds of ships. A ship, technically so described, has three masts—foremast, mainmast, mizenmast; a brig and schooner, two; sloop, cutter, or smack, one. The bowsprit and yards are made by the mast makers, and may be considered as masts or parts of the masts. The bowsprit extends obliquely from the stem of the vessel, rising at an angle of about five-and-thirty degrees; it carries sail which serves to govern the forepart of the ship, counteracting the force of the aft sails.

The importance of sheathing a vessel is seen from the fact that during a long voyage the bottom of a ship becomes encrusted with seaweed, shells, and the general *débris* of the ocean. Formerly, it was the practice, when a ship returned from a voyage, to melt the pitchy coating with which the bottom was covered, and scrape and brush off all the accumulated matter—matter which considerably impeded its progress. But about ninety years ago a sheathing of copper was proposed, and the result of the experiment was so highly satisfactory, that all ships of the royal navy were ordered to be henceforth copper-bottomed—a practice which soon came to be very generally followed with merchantmen and others.

Copper, or an alloy of copper and zinc, is prepared in sheets, about four feet long, by one foot wide; sometimes it is laid on the bare planking of the hull; at others, felt, or paper, or sheathing board, is introduced; when paper is used, it is dipped in melted pitch and tar. The sheets of copper are pierced with holes, through which flat-headed nails are driven, at about intervals of four inches all over the surface. The edges of the copper sheets are made to overlap one another.

SHIPS OF IRON.

But wooden ships with copper sheathing are fast yielding to the approach of iron. In this iron age of ours, for iron to float is nothing extraordinary; we have iron ships of all kinds, and Chips the carpenter must put himself out of the way of the steam-hammer, and resign his dockyard to the sons of Vulcan. Where be the sturdy trunks, from which the moss was not yet removed, which of old were seen in our dockyards—sturdy oaks, monarchs of the forest, felled by the woodman's axe? where be the mighty stacks of planks, and piles of timber? where be the sawyers and the carpenters, busy in the pit, busy in the shed—the saw-dust, and the ringlet shavings—the trenail cutters, and the oakum spinners, and the steaming tanks? All gone; to give place to forges roaring like a crater; steam machinery, punching, drilling, cutting, driving, rolling, twisting, screwing, joining; to anvils and hammers wielded by the Cyclops, to drawing mills and rivet furnaces. Iron! that puts us in mind of Charlemagne's triumphant army, at whose appearance the people cried, "Oh! the iron! the iron!"

But ships of iron or of wood have to be built on the same principle; the same sort of work has to be done. First, the architect to plan and make his drawings of what the ship will look like, and how it shall be built; then the work of moulding, where on a large flat flooring the draft of the ship is to be chalked out, and the exact size given of every rib in its skeleton. There is less difficulty to the moulder of an iron ship than to that of a wooden one; thin rods stand in place of the mould boards, and the *contour* or cross section of every rib is given while in the iron bar. The keel is laid down, of iron, a number of pieces being fastened together by bolts or rivets; stem and sternpost of iron; the ribs of iron; all riveted together, and presenting a light and apparently frail skeleton, when compared with the rude timbers of a wooden vessel; sheet iron, or iron plates, cover up the hull, riveted to the keel, and stem, and sternpost—a metally vessel that is ready to breast the waves, and, animated with the breath of steam, out-distance every craft that ever spread its canvas to the wind.

ANSWERS TO CORRESPONDENTS.

T. VAUGHAN.—Declined with thanks. Creditable for a first effort.—SPERO MELIORA: Under consideration.—PEDAGOGUS: A thorough knowledge of the English language comprehends its history and growth; its separate and combined phonetic elements; its orthography, accent, etymology, punctuation; syntax, prosody. There are many schoolmasters who profess to teach English, without the requisite qualification—teachers who need to be taught. If your statement with respect to yourself is impartial, we should consider you justified in undertaking to teach English and mathematics. Your handwriting is very defective.

J. SHIELD.—Practice will give you facility in writing the Greek character. The characters given in the lessons are those, and those only, which you have to form. Six months, if persevered in, will give you a sufficient knowledge of the language to allow of your reading easy chapters in the New Testament.

SELF-TAUGHT.—To be associated with the Wesleyan body would be the first step towards entering its ministry. If you are thus associated with it, consult your class-leader on the question you submit to us. See our "Hand-book on the Civil Service." Letter correctly written.

J. S. D.: Thanks for your commendations. Your suggestion shall have our best consideration.—H. *versus* S.: Very creditable. Persevere.—JOHN PATE should purchase our "Lessons in Latin," with "Key;" also our "Latin Dictionary," and then "push on" with his studies.

W. S.—The "Lessons in Greek" will commence in No. 69. They will furnish you with very valuable assistance in your studies. The price of the "Lessons in Greek" (published in a separate form) is 3s. 6d., or 4s. in cloth.

ALPHA.—Stick to THE POPULAR EDUCATOR. Try Beard's "Lessons in English and Latin." Persevere with the arithmetic. Letter creditably written.

A. L.—Yes, as in *Capias*. What is your age, and what is your object, are two important points in the question of gratuitous education.

ASPIRANT.—Persevere with the "Lessons in English." Do not meddle with any other treatise on the subject.

PERIGRINUS.—Right; the position of the words might be varied, as you propose.

F. Z. TERRY.—It will be best for you to consult an oculist *at once*.

J. J.—Try a port-crayon and French chalk.

BLUE PETER.—1. Six. 2. Begin again. 3. No.

A SUBSCRIBER (in Buckingham) will have some lessons on Mapping, &c., in the POPULAR EDUCATOR.—J. Y. (Preston) will find his wants supplied in the "Lessons on Chemistry," when they appear.—AMICUS (Stepney): The *subjects* for examination in Natural Philosophy and Chemistry, in the University of London, are always the same, but the *particular* questions vary every year. The *classical subjects* for the Pass Examination in 1862 have been stated in a recent number.—W. ASH (Holborn): His penmanship is really not so bad as he thinks; we advise him to buy our "Model Copy-books;" he may rest assured that by slow and careful perseverance he must improve. He ought, of course, to read *most carefully* our instructions as to the mode of holding the pen and sitting at the table.—W. BUTLER (Southwark): The sentence "I had known the deceased some years *previous* to his death" is the most correct.—A SUBSCRIBER (Isle of Man) should buy the latest edition of Webster's Dictionary. Encyclopædias very soon get out of date; we cannot recommend any one in particular, as you might be disappointed in the first article you turned up. The POPULAR EDUCATOR is better than any encyclopædia.

LITERARY NOTICES.

THE QUIVER.—SCRIPTURE AND GEOLOGY: THEIR AGREEMENT.—A series of most interesting and able articles, entitled, "The Works of God Bearing Witness to the Word of God," was commenced in No. 60 of "THE QUIVER."

In No. 61 of "THE QUIVER" is commenced a New Tale for Boys, entitled "William Allair; or, Running Away to Sea." By Mrs. HENRY WOOD, Author of "The Halliburtons," "The Channings," "East Lynne," &c. To be followed by a New Continuous Tale, by the same Author, which is now in preparation.

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CASSELL, PETTER, and GALPIN, La Belle Sauvage Yard, E.C.

LESSONS IN DRAWING.—No. XI.

ON TREES, AND THEIR APPENDAGES.

The student should now be able to draw regular forms with the necessary precision; and if he has thus far trained his hand to obey his wishes, he may be considered as having completed a preparatory course, or the first division of the exercises which are to make him a draughtsman. In such circumstances, his hand will no longer wander in unmeaning lines; and he should now know how to curb it, and when to give it liberty to move beyond the limits of symmetrical forms, so as to prevent that liberty from becoming license. But it is not advisable to carry to too great an extent the formal exercises which are necessary at the commencement; and it is usual for the student, at an early period of his course, to practice largely that free movement which is requisite in drawing *trees*, including under that term, *stems*, *branches*, *foliage*, and *herbage*. Of these we now proceed to give examples. Each kind of tree has its peculiarities in the character of stem, branches, and foliage (from folium, Lat. *a leaf*), and to each a peculiar *touch* is appropriate. These we shall explain farther on, but the essential point in drawing trees is that they shall be done with spirit, boldness, and freedom, combining also in the execution that discriminating touch which gives to each its character.

With a rather soft black-lead pencil, let the student now try to imitate such rude lines as these in fig. 95, dashing his hand up and down, and *feeling* the paper well with the pencil; in this exercise

Fig. 95.—Trunk of a Tree.

any well executed drawing or print will do for a copy. He should not draw such exercises with the point of the pencil *only*; by leaning it a little to one side, he will get a broader and richer touch; and when used in this way, the pencil has almost always a point at some part, until the lead in it is worn down to the wood so much as to require cutting. A *wiry* touch looks hard and unpleasant; while a soft uncertain touch has a tendency to look *smeary*. These extremes are to be avoided by aiming at a clear, distinct medium touch, with as much variety as can be got out of the lead pencil; for this is the most useful, and certainly the most advisable instrument the student can employ, yielding as it does *everything* in drawing to the touch of a master.

In the study of trees, let us begin with the *oak*, fig. 96.

Fig. 96.—Trunk of the Oak.

The oak tree which is here presented to our students of drawing, should not be passed over without some botanical and historical notice, in order to relieve their studies. Of the oak, there is a very considerable number of species, according to some, amounting to one hundred and fifty. These are generally reduced to three classes, namely, the *Robur* or *strong* oak; the *Ilex* or *evergreen* oak; and the *Cerris* or *deciduous* oak. Of the common or British oak, which belongs to the first class, and of whose leaves and fruit we have already given a drawing at p. 285, vol. ii., we here present the trunk, in a state of very considerable decay, arising from its extreme old age. The timber of this oak is reckoned the most suitable for ship-building; and the "wooden walls of Old England," under the imaginary care of her guardian Britannia, whose "home is on the deep," can testify to its complete adaptation to the national purposes of commerce and of safety. This species of oak sometimes attains to an extraordinary size in more genial climes. It is said that there is a specimen of one in Normandy, whose interior, having become hollow by decay, has been converted into a place of worship. The drawing of the trunk of an oak, in fig. 96, represents the commencement of this process of decay in the interior. From the earliest ages of the world has this "monarch of the woods" been accounted sacred for religious purposes. Its name in Hebrew, *Allon*, *Elah*, or *Allah*, signifies *strength* or *might*, and is evidently connected in its derivation with the name of God, that is, *El*, *Eloah*, *Elohim*, which properly means *the mighty One*, *the Almighty*, *the Omnipotent*. Thus, God is the *strength* of his people. In ancient times, when God visited his people by appearing to them in an angelic form, and with an audible voice, he appeared usually *under an oak*; hence, in order that he might be favoured by such visits, Abraham, *the friend of God*, dwelt by *the oak* of Moreh, or by *the oaks* of Mamre in Hebron, and *not the plains* of Mamre, as put in our common translation of the Bible.

The name of the oak in Greek is *Drus*, and this tree was held sacred to their imaginary god *Zeus*, or *Jupiter*, who was supposed to give his oracles from the oaks of Dodona in Epirus, as we gather from the Odyssey of Homer. Thus we see how the superstitious rites of the Greeks descended by tradition (which distorts everything sacred) from the ancient worship of the great father of the Hebrew race. From the same origin came the notions of the nymphs or goddesses, called *Dryads*, or *Druads*; *Adruads* and *Hamadruads*, whose lives were supposed to be bound up with that of the oaks which they were said to inhabit. The false worship thus given to these imaginary divinities was grafted on the stock of those early nations, which, departing from the early worship of the true God, and from the early seat of the human race, overspread Europe, and filled it with superstition, war, and barbarism. Thus the Greeks, the Etrurians, the Germans, the Celts, and the Scandinavians, delighted in the rites and ceremonies of the old oak worship, and verified the homely truth of Hudibras, when he says,

> "Sometimes the pleasure is as great,
> In being cheated, as to cheat."

The Celtic priests who officiated in this species of worship were called *Druids*, which title is evidently derived from the Greek name of the *oak*; and we know, from history, how prevalent this superstition was in Britain in ancient times, and how our ancestors were accustomed to indulge in its idolatrous rites. Many traces of this fact are to be found in various parts of the country, in circular clumps and groves of trees, and in circular erections of stones, and rude buildings of various kinds, allusion to which is not unaptly set forth in the following lines, from an old poem on the institution of the Order of the Garter, put into the mouth of the *Genius* of England:—

> "There on this solemn day assembled round
> The throne of British England: I, awhile,
> Must here await th' approach of other spirits,
> Sage Druids, Britain's old philosophers;
> Fetch'd by my summons from the Western isles,
> That, scatter'd o'er the rough Hibernian flood,
> Seem like huge fragments by the wild wave torn
> From stormy Scotland, and the Cambrian shore,
> There from the world retired in sacred shades,
> Chiefly where Breint and Meinai wash'd the oaks
> Of ancient Mona, their Academies
> And schools of sage and moral discipline
> They held; and to the neighbouring Britons round,
> From their rever'd tribunals, holy mounts,
> Dispens'd at once their oracles and laws.
> 'Till fierce Paulinus and his Roman bands,
> Them and their gods defying, drove them thence
> To seek for shelter in Hibernian shades.
> Yet still enamour'd of their ancient haunts,
> Unseen of mortal eyes, they hover round
> Their ruin'd altars, consecrated hills
> Once girt with spreading oaks, mysterious rows
> Of rude, enormous obelisks, that rise
> Orb within orb, stupendous monuments
> Of artless architecture, such as now
> Oft times amaze the wand'ring traveller,
> By the pale moon discern'd on Sarum's plain."

The allusion in the latter lines is to the Druidical remains at Stonehenge, on Salisbury-plain. A Greek writer, speaking of the Druidical system of worship, says: "The glory or the image of the Celtic Jove is the *lofty oak*;" and it is remarkable, that in the Septuagint translation of the Scriptures, *the oak of Moreh*, where Abraham dwelt, is called by the same name, *the lofty oak*.

The Latin name of the oak, namely, *Robur*, also signifies *strength*, like the Hebrew name. Hence comes our English word *robust*, meaning *strong*. The strength, beauty, and durability of this famous tree, have rendered it of the greatest use to man in buildings of every description, as well as in naval architecture. In the middle ages, it entered largely into the Gothic structures, and it was carved into every design under the sun. The much-admired roof of Westminster-hall is constructed of a species of oak. To the eye of the painter this tree forms one of his finest subjects; and, in proof of this, we have only to refer to the celebrated painting of Rubens, in the picture-gallery at Dresden: the "Boar Hunt in an Oak Forest."

In this example, fig. 96, which represents the lower part of the stem or trunk of an old oak, a rude, rough touch is desirable; and the smaller drawing of the same object (fig. 97.) shows the student what are the characteristic points—that is, those which he should determine in the first place.

Fig. 97.

Trunk of the Oak.

His drawing should be made at the least as large as the first of these figures, and he may make it larger if he pleases. The use of hot-pressed paper—which may be known by the high gloss it bears—such as the finest kinds of writing-paper, is to be avoided. Paper with a *grain* in it, provided that this is not too coarse, is the most suitable for such drawings. Hot-pressed paper is indeed often recommended for pencil drawing; but it is only suited for drawings which require great delicacy and extreme finish.

Any student who possesses the advantage of having the natural tree before him, or who can easily attain this advantage, should study from nature, confining his attempts for a while to about as much of the trunk as we have given in the preceding examples.

GOVT PATHSHALA 1865 কলিকাতা

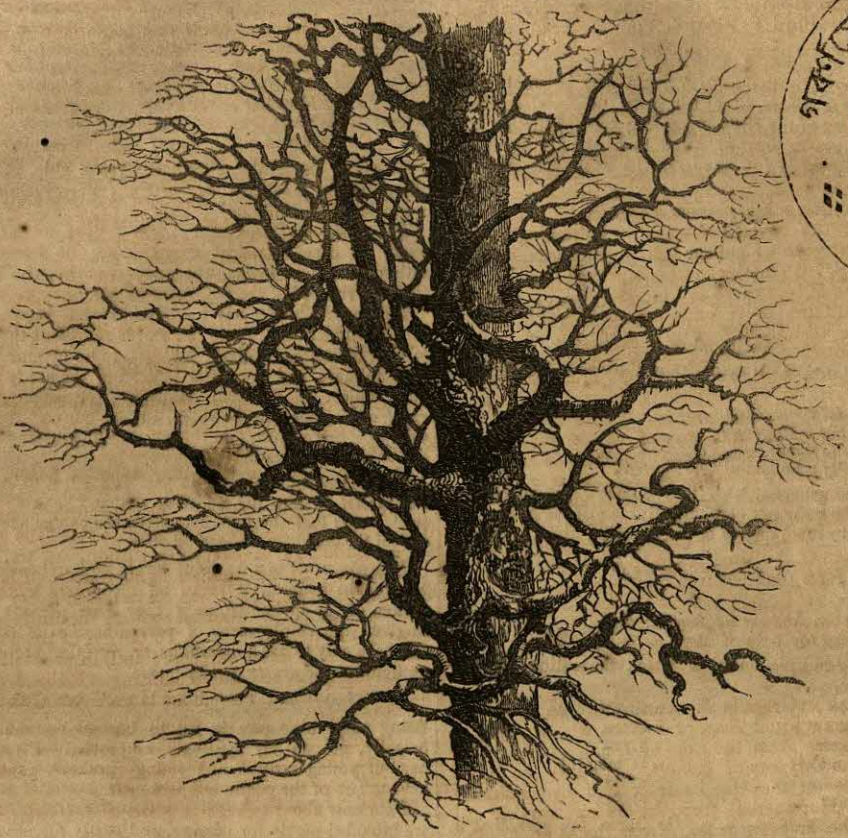

Fig. 98.—*Ramification of the Oak.*

In fig. 98, the student has an example of part of a very beautiful oak tree, which shews the nature of the *ramification* (from Latin, ramus, *a branch*, and facere, *to make*) or manner in which the branches are made to issue from the stem; this is always an important characteristic in a tree. There is also one *governing angle* in the ramification of each kind of tree, extending from the largest arms to the smallest twigs and branches; and to this characteristic too much attention cannot be paid by the student who wishes accurately to represent such natural objects.

In the oak this angle is nearly a right angle; and it is this circumstance which gives to the tree that peculiarly *stubborn* look, which is so characteristic of its nature.

In fig. 99, the student will distinctly see what he should aim at in the first instance; at A, B, C, he will observe marked examples of the peculiarity to which we have just adverted. When he has got his drawing put into this state, he may then proceed to add the smaller twigs. We have touched on this point before, but it will bear repetition, that he should *never* give attention to the smaller details, until he has secured the larger features of *whatever* subject he may take in hand. In drawing the angle of ramification, the student must remember that it is not *exactly* a right angle, but only nearly so; that is, it may be in some cases more than a right angle, and in others less than a rightangle. He must not be too precise in this matter, otherwise his drawings will only resemble mathematical diagrams.

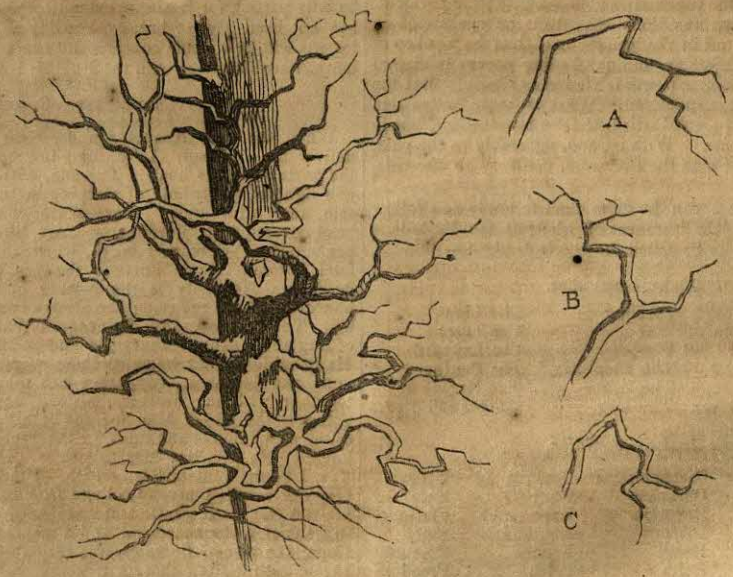

Fig. 99.—*Angle of Ramification in the Oak.*

LESSONS IN ENGLISH.—No. XLVII.

By JOHN R. BEARD, D.D.

GENDER. *(Continued.)*

MANY words give no indication as to *sex*, and may be used indifferently, as the sex requires, of either *males* or *females*. Such nouns have been called of the *common gender*; the appellation may pass, provided the reader bear in mind that, strictly speaking, there are in English only *two* genders, the *masculine* and the *feminine*.

Nouns either Masculine or Feminine.

child	friend	servant
cousin	neighbour	slave
dancer	novice	sage
enemy	orphan	thief
favourite	painter	sovereign
flatterer	parent	artist
fool	philosopher	writer

With these nouns, the *sex* is made known by some accompanying word, e. g.,

He is my cousin.
She is my cousin.
My female cousins are dead.
My male cousins have married.

Child, or *infant*, is generally used in the neuter gender (except when you wish to mark the sex emphatically), until the person you speak of has grown to some degree of intelligence; thus, we say of a babe,—

What a pretty child, and it is so good!

but we do not say,—

What a bad child! it tells stories; or,
It is a good boy, it has mastered its Latin lessons.

There are some *feminine* nouns of which masculine counterparts do not exist, e. g.,

a blonde	a shrew
a brunette	a syren
a dowager	a vixen
a dressmaker	a termagant
a mantuamaker	a scold
a milliner	a virago

Some titles are *double feminines*, e. g., *the Queen Dowager*, that is, *the King's widow*; *the Dowager Duchess of Derby*, that is, *the Earl of Derby's widow*.

Sex is sometimes attributed to inanimate objects. This attribution is very common in Latin, and other languages in which the ending of nouns is one means of determining the sex; thus, gladius, *a sword*, is of the masculine gender, because it ends in *us*. Sometimes *sex* may be ascribed to things without life, from a regard to the nature of the functions which such objects perform. Those which exert active functions may thus be spoken of as *masculine*; those which receive influences may thus be spoken of as *feminine*. In general, active and quickening energy is viewed as *male*, passive and producing power is viewed as *female*. But the rule is not of universal application. What is more active and quickening than the sun? In English, the *sun* is *masculine*, but in German the *sun* is *feminine*. With us, too, agreeably to the rule, the *moon* is *feminine*, but with the *Germans*, contrary to the rule, the *moon* is *masculine*.

Little more in this case can be done than to study and follow usage. As an aid, I subjoin instances of what, as the latitude is chiefly taken by poets, may be called the *poetic gender*:—

Poetic Gender.—Masculine.

Anger	Sleep	Tyranny	The Lion
Danger	The Sun	War	The Tiger
Death	Terror	Winter	The Leopard
Fear	Thunder	The Elephant	The Panther
Laughter	Time	The Horse	The Names of
Love	The Ocean	The Dog	Trees and Rivers

Poetic Gender.—Feminine.

Affection	Benevolence	Contemplation	Eternity	Fancy
Ambition	Charity	Darkness	Etna	Fate
Art	Chastity	Devotion	Experience	Flattery
Astronomy	Church	Discord	England	Folly
Autumn	Commerce	Earth	France	Fortune
Avarice	Compassion	Echo	Faith	Freedom
Beauty	Conscience	Envy	Fame	Habit
Happiness	London	Night	Pride	Spring
Heaven	Melancholy	Nature	Prose	Summer
Hope	Memory	Necessity	Reason	Tongue
Hour	Mind	Patience	Religion	Treason
Humility	Misfortune	Peace	Republic	Truth
Justice	The Moon	Pleasure	Science	Vice
Law	Morning	Plenty	Ship	Virtue
Liberty	Muse	Paris	Silence	Vanity
Life	Music	Poesy	Soul	Wisdom

Ship is of the feminine gender; yet a ship, intended for war-like purposes, is called *a man-of-war*; nevertheless, *a man-of-war* is spoken of as feminine.

The *gender* of Greek and Latin proper names, and the *poetic gender* of other classical nouns, must be learnt from classical authorities; thus *Venus*, the goddess of beauty, is *feminine*, and *Oceanus*, the god of the sea, is *masculine*.

This *poetic gender* has its basis in what is called prosopopœia, or *personification*. These two words represent the same thing, the former indicating a direct address to an inanimate object as if it were animate, and the latter indicating the ascription to an inanimate object of personal qualities. Prosopopeia, called also *apostrophé*, does not, however, always convert the *neuter* into the *masculine* or *feminine*; in the ensuing fine instance of apostrophé, *sword* retains its natural gender:—

"O thou sword of the Lord! how long will it be ere thou art quiet? Put thyself up into thy scabbard, rest, and be still! How can it be quiet, seeing that the Lord hath given it a charge against Askelon, and against the sea-shore?"—Jer. xlvii. 6.

Personification is a figure of larger comprehension than *apostrophé*, for, in general, it is to be recognised wherever things are spoken of, or spoken to, as if they were persons or animals. In English, the employment of personification is easy, inasmuch as you have only to use a *masculine* or *feminine* pronoun instead of a pronoun in the *neuter* gender; as,

"Haste! haste! Death lies in wait; *he's* at the door."

Being easy, this figure is apt to become common, and should be frugally, not to say sparingly, employed. *Personification* is the peril of young writers and young speakers, especially those who have aught of the poetic temperament.

I am now about to begin a series of exercises. These exercises are intended partly for parsing, and partly for practice in composition. One set of the examples will be complete; these may be considered as models;—in another set, the examples will be incomplete; these the student is to fill up according to the models, and according to the instructions in the several lessons. With these exercises I shall connect specimens of parsing, which, in his studies, the student should carefully meditate, making a point of parsing every sentence in every exercise. At first, the parsing can be only partial, for it cannot extend to points on which instruction has not been given; but, expounding as we proceed, the parsing lessons will as a whole comprehend everything involved in a grammatical acquaintance with the English language.

EXERCISES.—COMPLETE.

When the last trumpet sounds, then shall old father Ocean deliver up his dead. Love, the blind boy; never shall he enter the portals of this heart. The sun, with his vivifying rays, gives new light to the whole of sleeping nature. Time, with his balsam, heals all wounds. Stern winter comes tottering on, with his head covered with silvery snow. Art, like music, is very jealous of her votaries. O mother earth, when shall I again return to thy fond bosom! Dame Fortune showers her favours where least deserved. Necessity is the mother of invention. How sweet, how delightful is religion; she always comforts those who seek her aid. The Prince and the Princess of Wales are heirs to the crown of England. How many gods and goddesses have the Hindoos? Many millions, for some of them worship tigers and tigresses, lions and lionesses. My father and mother, my uncle and aunt, together with my brothers, sisters, nephews, and nieces, are going to the Isle of Man for sea-bathing. There were earls and countesses, monks and nuns, in the procession. Is Mr. Smith at home? No, Sir, but Mrs. Smith is. Do you know my cousin? Yes, I know William Earnsworth. I mean my female cousin. O yes, she married my old college friend. As a class, authoresses are not the most gentle and loveable of their sex. My mother is in want of a chamber-maid and a man-cook. The voice of Xantippe, the wife of Socrates, was very shrill, resembling that of a shrew rather than that of a syren. Poetry and painting are sister arts.

Exercises.—Incomplete.

Experience is the—of wisdom. War broke lose from—chains, chose Napoleon for—general, and set the whole of Europe in flames. Folly, twin sister to shame, has many votaries in—train. My mother-tongue is the—. Dame memory, at all times treacherous, has withdrawn—presence from me. Fate has marked me for—own. Fame, with—hundred brazen tongues, delights in scandal. I have read the affecting story of the Abbot Abelard, and the—Heloise, as written by Pope. There were at the ball four peers and six—, among whom were the—and the Countess of Shrewsbury. He lived a—till he was forty years of age, and then married. I saw at Gretna Green a bride of sixteen years of age, and a—of sixty. I want to see Miss Williams, not—Williams. Female authors want the robust strength of—. —Sappho was a Greek. Look at this horse; what a fine animal—is. Have you seen the Crystal Palace? Yes,—is a very fine structure. Time, the mightiest—of the earth, overcomes all things. Britannia sits on—invincible throne, the acknowledged—of the ocean.

Specimen of Parsing.

"Knowledge is proud that he has learn'd so much;
Wisdom is humble that he knows no more."

Knowledge, a noun neuter, of Indo-Germanic* origin, being found in the Latin nosco (Greek, gno), and the Teutonic *know*; it is the subject to the verb *is*.

Is, a verb, part of the substantive verb to be, the copula between the subject *knowledge* and the attribute *proud*.

Proud, an adjective, of Saxon or Teutonic origin, forming with *is*, the predicate to the subject *knowledge*.

That, a conjunction, uniting the two simple sentences *knowledge is proud* and *he has learn'd so much*.

He, a personal pronoun, of the masculine gender, the subject to the verb *has learn'd*.

Has learn'd, a verb transitive, of the past time, from the Teutonic lernen, *to teach*.

So, an adverb of Teutonic origin.

Much, a Teutonic adjective, singular number, neuter gender, employed here as a noun, and being the object after the transitive verb *has learn'd*.

Wisdom, a Teutonic abstract noun, made up of the adjective *wise*, and the termination *dom*.

Is, a part of the substantive verb *to be*, the copula between *wisdom* and *humble*.

Humble, from the Latin humilis, *low*, being the attribute to *wisdom*, and forming with *is*, the predicate to the subject (commonly called *the nominative case*), *wisdom*.

That, a conjunction, uniting the two simple sentences of which the proposition or period consists.

He, a personal pronoun, of the masculine gender, the subject to the verb *knows*.

Knows, a transitive verb (Indo-Germanic), of the *present time* or *tense*.

No, an adverb.

More, an adjective (Teutonic), from *much*; here with *no*, used as a noun, being the object to the verb *knows*.

Words with their proper Prepositions to be formed into sentences.

	F. R.
Deviate from,	de, *from*, and via, *away*
Devolve on, or upon,	de, *down*, and volvo, *I roll*
Devote to,	de, *down*, and votum, *a vow*
Dictate to,	dico, *I say*
Die of a disease; by the sword or famine; for another,	(a word of Saxon origin)
Differ with a person; in opinion, from a person or thing, or some quality,	dis, *in different directions*, and fero, *I bear*
Difficulty in,	dis, *not*, and facilis, *easy*
Disabled from,	dis, *not*, and able
Disagree with, to,	dis, *not*, and agree

L'homme s'ennuie du bien, cherche le mieux, trouve le mal, et s'y soumet crainte de pire.—*Lévis*.

L'homme passe sa vie à raisonner sur le passé, à se plaindre du présent, à trembler pour l'avenir.—*Rivarol*.

La plupart des hommes emploient la première partie de leur vie à rendre l'autre misérable.—*La Bruyère*.

Combien de grands hommes, généralement applaudis, ont gâté le concert de leurs louanges en y mêlant leur voix!—*Fontenelle*.

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* An Indo-Germanic word must be found in two classes of tongues, the Teutonic and the Greek or Latin. Teutonic is a general term for the class of languages which embraces the Anglo-Saxon, the German, the Dutch, &c.

LESSONS IN LATIN.—No. LI.

By John R. Beard, D.D.

VERBS WHICH GOVERN THE DATIVE.

If we look at the cases according to their applications, we find that the nominative (Latin nomen, *a name*) is that case in which the name or noun stands when it is uninflected, and when it is the subject of the verb. The nominative answers to the question *who*? or *which*? e. g.,

Naso dixit; Quis? Naso.
Naso said (it) who *(said it?) Naso.*

The genitive (from gigno, *I beget*, genus, *a kind*, or *race*), denotes the origin of a person or thing, e. g.,

Patris filia est pulchra;
The father's daughter is fair;

and hence possession in all its varieties. The genitive answers to the question *whose*? e. g.,

Est *matris* domus; cujus? matris.
It is the mother's house; *whose? mother's.*

The dative (from do, dare, datum, *I give*) conveys the ideas implied in our *to* and *for*, and so is the case of giving or receiving. The dative answers to the question *to* or *for whom*? e. g.,

Datur equus *militi*; cui? militi.
A horse is given to a soldier; *to whom? a soldier.*

The accusative (ad and causa) is the case of that which is caused or affected,—more strictly, that which is affected, that is, affected by the verb; that which is the object of the verb's action. As denoting the object, this case is more significantly called in English the objective case. The accusative or objective case answers to the question *whom*? or *what*? e. g.,

Misit *Robertum*; quem? Robertum.
He sent Robert; *whom? Robert.*

The vocative (voco, *I call*) is the case of calling, that is, of invocation or direct address, e. g.,

Huc veni, *domine.*
Sir, come hither.

The ablative (a and fero, ferre, tuli, *latum*) is the case of removing. As the dative denotes *giving to*, so the ablative denotes *taking from*. This seems to be the fundamental meaning of the ablative. Other significations, such as *by*, *with*, and *in*, are derivative. The ablative answers to the question *from* (or *by*) *whom* or *what*? e. g.,

Puer morsus est a cane; a quo? a cane.
A boy has been bitten by a dog; *by what? a dog.*

The nominative and vocative are called the direct cases, the rest are called the indirect or oblique cases; when, then, you read of the oblique cases, you will know that by the words are meant all the cases except the nominative and the vocative.

The oblique cases in Latin are not exactly identical in meaning with the corresponding cases in English. The Latin genitive is of much wider application than the English possessive, and not seldom implies relations which are commonly expressed by our *to* or *for*. The Latin ablative also embraces the varied significations of *from*, *by*, *through*, *in*, and *with*.

Although there exists this want of correspondence, yet is there so great a general agreement, that a knowledge of English usage in the relations of nouns to nouns, nouns to adjectives, and nouns to verbs, will afford material assistance to the student of Latin. In many cases the idioms of the two languages vary; nay, in Latin, verbs very like in meaning have different governments; thus the Latins said, juvo te, opitulor tibi, though both verbs signify *I help* or *assist*. These diversities show the necessity of studying and carefully imitating the Latin idioms; as well as warn the student not to blindly follow the analogy either of his own tongue or of the Latin itself.

Sometimes, however, a close inspection of the elements of a word may of itself assist the student to a knowledge of its construction, provided he looks at the matter with Latin and not English eyes. So long as he regards the common English meaning of juvo and opitulor, *I aid*, he discovers no reason why the second should govern a dative case, while the former governs an accusative. But let him analyse opitulor. Opitulor is made up of ops (opes) and tulo, and is thus equivalent to

opem tulo *alicui*," I bear aid *to some one*." Here the cause of the dative is at once seen, and the government falls under the rule that transitive verbs in the active voice take after them a dative as well as an accusative. A similar exposition shows why succurro, *I aid* or *succour*, requires a dative, for succurro consists of sub and curro. Maledico, *I speak evil of*, may have its construction explained in the same manner. If you look merely at the English, *I speak evil of*, and are told that the corresponding Latin term is maledico, you, remembering that *of* is the English sign of the Latin genitive, will be disposed to think that the verb maledicere governs a genitive. But look at the composition of the word. It is a compound term, consisting of dico, *I say*, and male, *evilly*. Now, according to the genius of the Latin, verbs compounded with adverbs have a dative for their regimen or government; so that maledicere alicui is *to say evil to* or *respecting any one*. There are no few verbs which govern an accusative as well as a dative. This difference arises from a difference of view. You must always bear in mind that language is a picture of thought. The Latin language is a picture of Latin thought. Every Latin word exhibits a state of mind. Every Latin word implies the particular state of mind of which it is the utterance. Hence the necessity of getting to regard a relation of one object to another, or one state of mind to another, or of one action to another, just in the way in which the relation was regarded by Cicero or Caesar. But in their own minds the view may have varied at different times. As the view varied, so the construction varied. With this variation of construction, there of necessity arose two cases expressive of two separate relations. Sometimes a verb has three or even four constructions. Take an example or two :—

1 2 3
a. Cavere alicui, cavere aliquem, cavere ab aliquo.
1 2 3 4
b. Convenire alicui, convenire ad rem, convenire in rem, convenire aliquem, convenire cum aliquâ re.
5
1 2 3 5
c. Insistere rei, insistere in re, insistere viam, insistere rationem.

For the sake of brevity, I will give the English arranged according to the numbers :—

1 2 3
a. to take precautions for (any one), to protect oneself against, to guard against.
1 2 4 4 5
b. to agree with, to suit, to be fit for, to meet, to correspond.
1 2 3 4
c. to stand on, to be in, to tread a road, to follow a plan.

In all etymological inquiries and considerations the first thing is to get to know the physical or primary meaning of the word. When you know this, you will, with a little practice, easily make out the derivative or secondary meanings for yourself. Thus insistere (from in and sto) has for its root-meaning *to stand on;* as a house stands on a river's bank, so an image may stand on, that is be in, or be held up, in a man's hand; with an extended application, *to stand on*, is to tread, or pursue a road, and with a yet wider application, to follow or execute a plan.

A change of construction is not always attended by a change of meaning. At least the change, if any, is in some instances so slight, and has so strictly a reference to the Latin point of view, as to be scarcely appreciable by English minds. Thus the Latins said equally

Dono tibi aliquid ;
I give something to thee; and
Dono te aliquâ re.
I gift thee with something.

This twofold construction is found in the compounds impertio, induo, exuo, circumdo, circumfundo, inuro, illĭno, intercludo, adspergo and inspergo, &c. The government may be given thus : alicui aliquid; alicui aliquem; or aliquem aliquâ re, aliquid aliquâ re.

If, then, you consider what verbs imply the relation indicated by *to* or *for*, you will ascertain the class of verbs which require their object to be in the dative. But here you must take difference of idiom into account. In English we say, *they obey me*, but the Latins said they obey *to* me, mihi obediunt. Hence arises what is called the rule, that in Latin *verbs of obeying and commanding are constructed with a dative.* In English we say, *he approached the shore*, though the expression is elliptical, and he approached *to* the shore was formerly used. In Latin when appropinquare denotes motion it takes an accusative with ad (our *to*) or the dative without ad; the dative without ad is used when the verb denotes a position, a being or a lying near, e. g.,

Ad summam aquam pisces appropinquant.
Fishes draw near (rise) to the top of the water.
Munitionibus appropinquant milites.
The soldiers approach the fortifications.
Rivus *oppido* appropinquat
The river is near the town.

Dare alicui aliquid is sometimes equivalent *to do something out of love or regard for*, e. g.,

Da hoc patriae ut consilio tuo uti possit.
Give this to thy country that it may make use of thy counsel.

After a similar manner are employed the verbs donare, condonare, remittere, concedere.

Many verbs compounded of prepositions take their object in the dative case. The prepositions in question are a, ad, ante, de, e, ob, post, pro, super. Instead of a preposition an adverb is used, such as male and bene.

"To marry," in English, has a construction corresponding with the Latin accusative. Thus we say *she married him, he married her*. But nubo, *I marry*, in Latin commonly requires a dative. Nubo is used of the female, thus, nupsit Chloe Claudĭo, *Chloe married Claudio*. The reason why nubere requires a dative is found in its derivation. Nubo has for its stem nub which is the base of nubes *a cloud*, also *a veil*. Now the bride came to her husband veiled. Accordingly she was said to veil herself to or for, that is, to marry her husband. On his part the male was said ducere uxorem, to lead or conduct a wife, that is domum, home.

The verb esse when it signifies possession, being equivalent to our word *have*, puts in the dative the noun which denotes the possessor, e. g.

Est *mihi* timor.
I am afraid.

To this rule belong such forms as :

Fonti nomen Arethusa est.
The fountain has the name (of) Arethusa.

In this case Arethusa agrees with nomen. It is more common for the name to be in the dative by attraction to the noun or pronoun, e. g.

Scipio, *cui* postea *Africano* cognomen fuit.
Scipio, who afterwards had the surname (of) Africanus.

More rare is the construction in which the word nomen governs the actual name, e. g.,

Nomen Mercurii est mihi.
I have the name of Mercury.

The dative of the possessor is distinguished from the genitive of the possessor in this, that the former is used when you ask for what is possessed, and the latter when you ask who is the possessor, e. g.

1 Regi est ager.
The field belongs to the king.
2 Ager est regis.
The field is the king's.

In number one you ask "what belongs to the king?" Answer, "the field." In number two you ask "whose is the field?" Answer, "the king's."

What has been said of the dative of the pronoun may enable us to explain the use of datives with passive verbs. The ordinary construction is thus :—

A me consilium captum est.
A plan has been taken by me.

Instead of which Cicero says—

Mihi consilium captum est.

Here *mihi* is equivalent to *a me*. An action completed for or to a person, is an action which he has completed, and which as such belongs to him.

Similar is the use of the dative with the gerund or the passive participle in dus, e. g.,

Amandum est *mihi*.
I must love.
Ratio *nobis* reddenda est.
An account must be given by us.

Only seldom is the use of the dative in prose with verbs in the present tense, e. g.,

Honesta *bonis viris*, non occulta quaeruntur.
Honourable (and) not hidden things are sought for by good men.

The poets freely employ this construction with the dative. The student may at first be excused from attempting to imitate it.

Adjectives which involve the idea of *to* or *for* take a dative. Such adjectives are those which signify useful, useless, suitable, unsuitable, known, friendly, &c., e. g., utilis, inutilis, salutaris, damnosus, gratus, carus, aptus, accomodatus, idoneus, facilis, difficilis, notus, ignotus, proprius, alienus, amicus, aequus, iniquus, infrstus, infensus, iratus, fidus, fidelis, &c. So with the adverbs convenienter, constanter, amice.

Some of these adjectives admit of another construction, namely, ad with the accusative, as utilis ad rem; or erga with the accusative, as benevolus erga aliquem; or again, the genitive without a preposition, as, alienus alicujus rei, *foreign to a matter*, that is, having nothing to do with it, knowing nothing of it. Alienus may be also constructed thus, alienus aliquâ re, or ab aliqua re. Proprius may have a genitive, as proprius alicujus, *peculiar to some one*, or some thing. Amicus, *friendly*, inimicus, *unfriendly*, familiaris, *intimate with*, and superstes, *surviving*, are often used as substantives, and consequently take their object in the genitive. Aptus and idoneus, if used of a thing, are generally constructed with an accusative, and ad, if of a person, simply with a dative.

The dative is also used with adjectives signifying *like, unlike, near, related*, &c., such as par, impar, dispar, aequalis, inequalis, similis, dissimilis, contrarius, propinquus, propior, proximus, finitimus, vicinus, affinis, cognatus, communis, &c.

Aequalis, affinis, vicinus, propinquus, are employed and constructed as nouns.

Propior and proximus may have an accusative, but only as referring to place, thus propior hostem, but not propior clementiam, instead of which you must say propior clementiae. Probably the former construction is to be explained by the ellipsis or omission of ad.

Similis and dissimilis take a genitive as well as a dative; a genitive when the likeness or unlikeness is internal, a dative when external.

Idem may be constructed with a dative, e. g.,

Invitum qui servat idem facit occidenti.
He who saves a person unwilling (to be saved) does the same as one who kills (another).

What grammarians call the dativus commŏdi or incommŏdi, *the dative of advantage or disadvantage*, is simply a dative arising out of the general relation involved in *to* or *for*, e. g.,

Tibi aras, tibi occas, tibi seris, tibi eidem metis.
Thou sowest for thyself, thou harrowest for thyself, &c.

The dative of a personal pronoun, mihi, tibi, nobis, vobis, called the dativus ethicus, or the *dative of feeling*, may seem to the ordinary English student as superfluous, but in reality conveys a half latent meaning which it is not always easy to give in English, e. g.,

At *tibi* repente paucis post diebus venit ad me Caninius.
But Caninius suddenly came to me a few days afterwards.

Certain exclamations govern a dative, as vae tibi! *alas for thee!* hei misero mihi! ah, *me miserable!*

For the sake of illustration, I may also state that verbs which signify to *serve* and *to be intended for*, or in general verbs which have a second object in relation to or for which an act takes place, such as dare, relinquere, tribuere, mittere, &c. take a dative as well as, for the most part, an accusative.

Esse, when it signifies *to cause* or bring, has a dative, e. g.,

Nimia fiducia *calamitati* solet esse.
Excessive confidence is wont to be for (to cause) calamity.

The object on whom the calamity falls is also in the dative, e. g.,

Nimia *tibi* fiducia calamitati erat.
Thy too great confidence caused calamity to thee.

The rule is commonly given thus, est for affero (*I bring to*) takes two datives, one of the person, the other of the thing, e. g.,

Haec res *mihi voluptati* fuit.
This thing gave me pleasure.

The force of the dative may often be best rendered by as, e. g.

Paupertas *probro* haberi coepit.
Poverty began to be held as a disgrace.

Vocabulary.

Obtempero 1. *I obey, yield to*; simulacrum, i, n. *an image*; adimo 3. I take away; neptis, is, f. *a grand-daughter*; despondeo, 2, *I promise marriage to, I betrothe*; simultas, atis, f. *a grudge*, or *secret hate*; obtrecto (ob and tracto) 1. *I disparage, slander*; vigiliae, arum, f. *a watch by night, watches*; lascivia, ae, f. *lasciviousness*; socordia, ae, f. *sloth*; auctor, ōris, m. *an author*; auctor fui, *I recommended*; deligo, 3. *I select*; antecello, 3. *I surpass.*

Exercises.—Latin-English.

Caesar Dumnorigi dixit se praeterita Divitiaco fratri (Dumnorigis) condonare; maledicit utrique mulier nequissima; medici, toto corpore curando, minimae etiam parti medentur; Venus nupsit Vulcano; obtrectatur Gabinio; Trebatium objurgavi quod parum valetudini parceret; nihil facile persuadetur invitis; sic mihi persuadeo; inimicitias suas reipublicae donat civis bonus; labori ac duritiae student Germani; mihi persuasum est te esse vilem; adest periculis dux bonus; remedia adhibuit vulneribus medicus; bellum Galliae intulit Caesar; certis rebus certa signa praecurrunt; parva magnis confert pater; omnium salutem singulorum saluti anteposuit consul; equidem mihi omnia propono; posthabuit filii caritatem publicae utilitati; Quintus Fabius unus exstinctae ad Cremeram genti superfuit; honores detulit senatus claris viris; virgo nupsit ei, cui Caecilia nupta fuerat; tibi nomen insano posuere custodes; ei morbo nomen est avaritia; nomen Arcturo est mihi; mihi deliberatum et constitutum est; oratori omnia quae sunt in hominum vitâ, quaesita, audita, lecta, disputata, tractata esse debent; erat Alcibiades eâ sagacitate ut decipi non posset, praesertim quum animum attendisset ad cavendum; non bene conveniunt nec in unâ sede morantur majestas et amor; pater filio canem dedit; Rhenus oceano appropinquat; nescis cui maledicas viro; cave canem; num videntur convenire haec nuptiis? villae, secutae fluminis amoenitatem, margini insistunt; mundus Deo paret, et huic obediunt maria terraeque, et hominum vita jussis supremae legis obtemperat; absŏte caveo cautius; mihi cum Dejotaro convenit ut ille in meis castris esset cum suis copiis; ille Pompeium monebat ut meam domum metueret atque a me ipso caveret; inter omnes vero convenit Sibyllam ad Tarquinium Superbum tres libros attulisse; tu quod cavere possis stultum admittere est; mihi nec locus nec sermo convenit; insistebat in manu Cereris dextrâ simulacrum Victoriae; Crasso signa ademerant Parthi; Attici neptem Caesar Tiberio Claudio Neroni despondit; ipsi patriae conducit pios cives habere in parentes; improbo et stulto nemini bene esse potest; memoriam simultatium patriae remisit Caesar; Perseus vix notis familiariter arridebat; aliorum laudi atque gloriae maxime invideri solet; haec tibi agitata esse debent; cui non sunt auditae Demosthenis Vigiliae? semper ita vivamus ut rationem reddendam nobis arbitremur; apud Pythagoram discipulis quinque annis tacendum erat; neque cernitur ulli Aeneas; Julianus et Apollinaris lasciviâ socordiâque gladiatorum magis quam ducum similes; filius meus, si quid peccat, mihi peccat; non solum nobis divites esse volumus, sed liberis, propinquis, amicis, maximeque reipublicae; Pompeio et senatui pacis auctor fui; quis huic rei testis est? quid mihi Celsus agit? quid tibi vălis? avaritia senilis quid sibi velit non intelligo; virtus sola neque dono datur neque accipitur; habere quaestui rempublicam turpe et nefarium est; vitio mihi dant quod mortem amici graviter fero; Pausanius venit Atticis auxilio; Veientes Sabinis sunt auxilio; hunc sibi domicilio locum delegerunt; Caesar quinque cohortes castris praesidio reliquit; somnus simillimus est morti; medicus subvenit corpori aegroto; sed quis medetur animo? leoni est vox terribilis; Aegyptus adjecta est imperio Romano; qui sibi id detrahit, quod alteri donat, is est liberalis; Graecorum poetarum ingenium ceterarum gentium poetis longe antecelluit.

English-Latin.

Thy name is Robert; I gave to my son the name of Robert; your son is very like his father; thou sowest for another, not thyself; I have a field; my field brings me riches; my friends have come for my aid; the boys selected plays for themselves; the physician assists thee, but cannot cure thee; they have left me as a guard for the house; alas for me! what am I doing? Italy was added to the empire of France; my brother's genius far excels mine; if thou sinnest, thou sinnest against (for) thyself; take care of the lion; the book lies near the door; the forces stand on the

river's brink; the book suits me; our soldiers will take standards from the enemy; it is not well with the impious; bad men curse (speak evil of) each other; it is not proper for thee to be ignorant; the horse runs before the chariot; they propose all good things to themselves; the senate will confer the greatest honours on the brave general; many things are easily persuaded to the willing; the physician will apply remedies to thy wounds; the English give themselves to (studere) labour; my father is in danger; he granted the pardon to his supplicating wife; I shall marry a virgin.

LESSONS IN FRENCH.—No. XLVIII.

By Professor Louis Fasquelle, LL.D.

§ 53.—Regular Verbs.—*Continued.*

FOURTH CONJUGATION,—ENDING IN *RE*.

MODEL VERB.

VENDRE, *TO SELL.*

Indicative Mode.

SIMPLE TENSES.		COMPOUND TENSES.	
PRESENT.		**PAST DEFINITE.**	
Je vends,	*I sell*	J'ai vendu,	*I have sold*
Tu vends,	*thou sellest*	Tu as vendu,	*thou hast sold*
Il vend,	*he sells*	Il a vendu,	*he has sold*
On vend,	*one sells*	On a vendu,	*one has sold*
Nous vendons,	*we sell*	Nous avons vendu,	*we have sold*
Vous vendez,	*you sell*	Vous avez vendu,	*you have sold*
Ils vendent,	*they sell*	Ils ont vendu,	*they have sold*
IMPERFECT.		**PLUPERFECT.**	
Je vendais,	*I was selling, or used to sell*	J'avais vendu,	*I had sold or been selling*
Tu vendais,	*thou wast selling*	Tu avais vendu,	*thou hadst sold*
Il vendait,	*he was selling*	Il avait vendu,	*he had sold*
On vendait,	*one was selling*	On avait vendu,	*one had sold*
Nous vendions,	*we were selling*	Nous avions vendu,	*we had sold*
Vous vendiez,	*you were selling*	Vous aviez vendu,	*you had sold*
Ils vendaient,	*they were selling*	Ils avaient vendu,	*they had sold*
PAST DEFINITE.		**PAST ANTERIOR.**	
Je vendis,	*I sold or did sell*	J'eus vendu,	*I had sold*
Tu vendis,	*thou soldest*	Tu eus vendu,	*thou hadst sold*
Il vendit,	*he sold*	Il eut vendu,	*he had sold*
On vendit,	*one sold*	On eut vendu,	*one had sold*
Nous vendîmes,	*we sold*	Nous eûmes vendu,	*we had sold*
Vous vendîtes,	*you sold*	Vous eûtes vendu,	*you had sold*
Ils vendirent,	*they sold*	Ils eurent vendu,	*they had sold*
FUTURE.		**FUTURE ANTERIOR.**	
Je vendrai,	*I shall sell*	J'aurai vendu,	*I shall have sold*
Tu vendras,	*thou wilt sell*	Tu auras vendu,	*thou wilt have sold*
Il vendra,	*he will sell*	Il aura vendu,	*he shall have sold*
On vendra,	*one will sell*	On aura vendu,	*one will have sold*
Nous vendrons,	*we shall sell*	Nous aurons vendu,	*we shall have sold*
Vous vendrez,	*you will sell*	Vous aurez vendu,	*you will have sold*
Ils vendront,	*they will sell*	Ils auront vendu,	*they shall have sold*

Conditional Mode.

PRESENT.		**PAST.**		
Je vendrais,	*I should sell*	J'aurais vendu,	*I should*	*have sold*
Tu vendrais,	*thou wouldest sell*	Tu aurais vendu,	*thou wouldest*	
Il vendrait,	*he might sell*	Il aurait vendu,	*he might*	
On vendrait,	*one would sell*	On aurait vendu,	*one should*	
Nous vendrions,	*we should sell*	Nous aurions vendu,	*we should*	
Vous vendriez,	*you might sell*	Vous auriez vendu,	*you should*	
Ils vendraient,	*they would sell*	Ils auraient vendu,	*they should*	

Imperative Mode.

Vends,	*sell thou*
Qu'il vende,	*let him sell*
Qu'on vende,	*let one sell*
Vendons,	*let us sell*
Vendez,	*sell ye or you*
Qu'ils vendent,	*let them sell*

Subjunctive Mode.

SIMPLE TENSES.		COMPOUND TENSES.		
PRESENT.		**PAST.**		
Que je vende,	*that I may sell*	Que j'aie vendu,	*that I may*	*have sold*
Que tu vendes,	*that thou mayest sell*	Que tu aies vendu,	*that thou mayest*	
Qu'il vende,	*that he may sell*	Qu'il ait vendu,	*that he may*	
Qu'on vende,	*that one may sell*	Qu'on ait vendu,	*that one may*	
Que nous vendions,	*that we may sell*	Que nous ayons vendu,	*that we may*	
Que vous vendiez,	*that you may sell*	Que vous ayez vendu,	*that you may*	
Qu'ils vendent,	*that they may sell*	Qu'ils aient vendu,	*that they may*	
IMPERFECT.		**PLUPERFECT.**		
Que je vendisse,	*that I might sell*	Que j'eusse vendu,	*that I might*	*have sold*
Que tu vendisses,	*that thou mightest sell*	Que tu eusses vendu,	*that thou mightest*	
Qu'il vendît,	*that he might sell*	Qu'il eût vendu,	*that he might*	
Qu'on vendît,	*that you might sell*	Qu'on eût vendu,	*that one might*	
Que nous vendissions,	*that we might sell*	Que nous eussions vendu,	*that we might*	
Que vous vendissiez,	*that you might sell*	Que vous eussiez vendu,	*that you might*	
Qu'ils vendissent,	*that they might sell*	Qu'ils eussent vendu,	*that they might*	

Infinitive Mode.

PRESENT.		PAST	
Vendre,	*to sell*	Avoir vendu,	*to have sold*

Participle.

PRESENT.		COMPOUND.	
Vendant,	*selling*	Ayant vendu,	*having sold*

PAST OR PASSIVE.

Vendu, *sold.*

§ 54.—Conjugation of a Passive Verb.

ETRE AIME, *TO BE LOVED.*

Indicative Mode.

PRESENT.			
Je suis aimé, *m.* aimée, *f.*	*I am loved*		
Tu es aimé *or* aimée,	*thou art loved*		
Il est aimé,	*he is loved*		
Elle est aimée,	*she is loved*		
On est aimé,	*one is loved*		
Nous sommes aimés *or* aimées,	*we are loved*		
Vous êtes aimés *or* aimées,	*you are loved*		
Ils sont aimés, *m.*	*they are loved*		
Elles sont aimées, *f.*	*they are loved*		
IMPERFECT.			
J'étais aimé, *m.* aimée, *f.*	*I was loved, was being loved*		
Tu étais aimé *or* aimée,	*thou wast loved, wast being loved*		
Il était aimé,	*he was loved, was being loved*		
Elle était aimée,	*she was loved, was being loved*		
On était aimé,	*one was loved, was being loved*		
Nous étions aimés *or* aimées,	*we were loved, were being loved*		
Vous étiez aimés *or* aimées,	*you were loved, were being loved*		
Ils étaient aimés, *m.*	*they were loved, were being loved*		
Elles étaient aimées, *f.*	*they were loved, were being loved*		
PAST DEFINITE.			
Je fus aimé, *m.* aimée, *f.*	*I was loved*		
Tu fus aimé *or* aimée,	*thou wast loved*		
Il fut aimé,	*he was loved*		
Elle fut aimée,	*she was loved*		
On fut aimé,	*one was loved*		
Nous fûmes aimés *or* aimées,	*we were loved*		
Vous fûtes aimés *or* aimées,	*you were loved*		
Ils furent aimés, *m.*	*they were loved*		
Elles furent aimées, *f.*	*they were loved*		
PAST INDEFINITE.			
J'ai été aimé *or* aimée,	*I have been loved*		
Tu as été aimé *or* aimée,	*thou hast been loved*		
Il a été aimé,	*he has been loved*		
Elle a été aimée,	*she has been loved*		
On a été aimé,	*one has been loved*		
Nous avons été aimés *or* aimées,	*we have been loved*		
Vous avez été aimés *or* aimées,	*you have been loved*		
Ils ont été aimés, *m.*	*they have been loved*		
Elles ont été aimées, *f.*	*they have been loved*		

or used to be loved

PAST ANTERIOR DEFINITE.

J'eus été aimé, *m.* aimée, *f*	*I had been loved*
Tu eus été aimé *or* aimée,	*thou hadst been loved*
Il eut été aimée,	*he had been loved*
Elle eut été aimé,	*she had been loved*
On eut été aimé,	*one had been loved*
Nous eûmes été aimés *or* aimées,	*we had been loved*
Vous eûtes été aimés *or* aimées,	*you had been loved*
Ils eurent été aimés, *m.*	*they had been loved*
Elles eurent été aimées, *f.*	*they had been loved*

PLUPERFECT.

J'avais été aimé *or* aimée,	*I had been loved*
Tu avais été aimé *or* aimée,	*thou hadst been loved*
Il avait été aimé,	*he had been loved*
Elle avait été aimée,	*she had been loved*
On avait été aimé,	*one had been loved*
Nous avions été aimés *or* aimées,	*we had been loved*
Vous aviez été aimés *or* aimées,	*you had been loved*
Ils avaient été aimés, *m.*	*they had been loved*
Elles avaient été aimées, *f.*	*they had been loved*

FUTURE.

Je serai aimé, *m.* aimée, *f.*	*I shall* or *will be loved*
Tu seras aimé *or* aimée,	*thou shalt* or *wilt be loved*
Il sera aimé,	*he shall* or *will be loved*
Elle sera aimée,	*she shall* or *will be loved*
On sera aimé,	*one shall* or *will be loved*
Nous serons aimés *or* aimées,	*we shall* or *will be loved*
Vous serez aimés *or* aimées,	*you shall* or *will be loved*
Ils seront aimés, *m.*	*they shall* or *will be loved*
Elles seront aimées, *f.*	*they shall* or *will be loved*

FUTURE ANTERIOR.

J'aurai été aimé, *m.* aimée, *f.*	*I shall, will have been loved*
Tu auras été aimé *or* aimée,	*thou shalt, wilt have been loved*
Il aura été aimé,	*he shall, will have been loved*
Elle aura été aimée,	*she shall, will have been loved*
On aura été aimé,	*one shall, will have been loved*
Nous aurons été aimés *or* aimées,	*we shall, will have been loved*
Vous aurez été aimés *or* aimées,	*you shall, will have been loved*
Ils auront été aimés, *m.*	*they shall, will have been loved*
Elles auront été aimées, *f.*	*they shall, will have been loved*

CONDITIONAL MODE.

PRESENT.

Je serais aimé, *m.* aimée, *f.*	*I should, would, could, might be loved*
Tu serais aimé *or* aimée,	*thou shouldst, couldst, mightest be loved*
Il serait aimé,	*he would* or *might be loved*
Elle serait aimée,	*she might be loved*
On serait aimé,	*one could be loved*
Nous serions aimés *or* aimées,	*we should* or *would be loved*
Vous seriez aimés *or* aimées,	*you would* or *might be loved*
Ils seraient aimés, *m.*	*they might* or *should be loved*
Elles seraient aimées, *f.*	*they might, could, should be loved*

PAST.

J'aurais été aimé, *m.* aimée, *f.*	*I should, would have been loved*
Tu aurais été aimé *or* aimée,	*thou wouldst have been loved*
Il aurait été aimé,	*he would have been loved*
Elle aurait été aimée,	*she would have been loved*
On aurait été aimé,	*one would have been loved*
Nous aurions été aimés *or* aimées,	*we might have been loved*
Vous auriez été aimés *or* aimées,	*you would have been loved*
Ils auraient été aimés, *m.*	*they might have been loved*
Elles auraient été aimées, *f.*	*they should* or *might have been loved*

IMPERATIVE MODE.

Sois aimé, *m.* aimée, *f,*	*be thou loved*
Qu'il soit aimé,	*let him be loved*
Qu'elle soit aimée,	*let her be loved*
Qu'on soit aimé,	*let one be loved*
Soyons aimés, *or* aimées,	*let us be loved*
Soyez aimés *or* aimées,	*be ye* or *you loved*
Qu'ils soient aimés, *m.*	*let them be loved*
Qu'elles soient aimées, *f.*	*let them be loved*

SUBJUNCTIVE MODE.

PRESENT.

Que je sois aimé, *m.* aimée, *f.*	*that I may be loved*
Que tu sois aimé *or* aimée,	*that thou mayest be loved*
Qu'il soit aimé,	*that he may be loved*
Qu'elle soit aimée,	*that she may be loved*
Qu'on soit aimé,	*that one may be loved*
Que nous soyons aimés *or* aimées,	*that we may be loved*
Que vous soyez aimés *or* aimées,	*that you may be loved*
Qu'ils soient aimés,	*that they may be loved*
Qu'elles soient aimées,	*that they may be loved*

IMPERFECT.

Que je fusse aimé, *m.* aimées *f.*	*that I might be loved*
Que tu fusses aimé *or* aimée,	*that thou mightest be loved*
Qu'il fût aimé,	*that he might be loved*
Qu'elle fût aimée,	*that she might be loved*
Qu'on fût aimé,	*that one might be loved*
Que nous fussions aimés *or* aimées,	*that we might be loved*
Que vous fussiez aimés *or* aimées,	*that you might be loved*
Qu'ils fussent aimés, *m.*	*that they might be loved*
Qu'elles fussent aimées, *f.*	*that they might be loved*

PAST.

Que j'aie été aimé, *m.* aimée, *f.*	*that I may have been loved*
Que tu aies été aimé *or* aimée,	*that thou mayest have been loved*
Qu'il ait été aimé,	*that he may have been loved*
Qu'elle ait été aimée,	*that she may have been loved*
Qu'on ait été aimé,	*that one may have been loved*
Que nous ayons été aimés *or* aimées,	*that we may have been loved*
Que vous ayez été aimés *or* aimées,	*that you may have been loved*
Qu'ils aient été aimés, *m.*	*that they may have been loved*
Qu'elles aient été aimées, *f.*	*that they may have been loved*

PLUPERFECT.

Que j'eusse été aimé, *m.* aimée, *f.*	*that I might have been loved*
Que tu eusses été aimé *or* aimée,	*that thou mightest have been loved*
Qu'il eût été aimé,	*that he might have been loved*
Qu'elle eût été aimée,	*that she might have been loved*
Qu'on eût été aimé,	*that one might have been loved*
Que nous eussions été aimés *or* aimées,	*that we might have been loved*
Que vous eussiez été aimés *or* aimées,	*that you might have been loved*
Qu'ils eussent été aimés,	*that they might have been loved*
Qu'elles eussent été aimées,	*that they might have been loved*

INFINITIVE MODE.

PRESENT.

Etre aimé, *m.* aimée, *f.*	*to be loved*

PARTICIPLE.

PRESENT.

Etant aimé, *m.* aimée, *f.*	*being loved*

COMPOUND.

Ayant été aimé, *m.* aimée, *f.*	*having been loved*

PAST.

Avoir été aimé, *m.* aimée, *f.*	*to have been loved*

§ 55—RULE.

There is only one conjugation for passive verbs. It is formed of the auxiliary *être* in all its tenses, simple and compound, and the participle past of the active verb which we wish to conjugate in the passive voice. See § 43 (4.)

LESSONS IN GEOLOGY.—No. XXXI.

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CHAPTER II.

ON THE ACTION OF WATER ON THE EARTH'S CRUST.

SECTION XV.

ON THE DISTRIBUTION OF DRIFTS AND BOULDERS.

In extensive districts of the northern hemisphere of our globe, both in Europe and America, valleys, plains, and mountains, are found covered all over with transported gravel, sands, boulders, and massive blocks, some of which are water-worn and others rugged and angular.

This transported matter was formerly called Diluvian, as it was supposed to have been caused by some tremendous debacle, like Noah's flood; but it is now generally called Drift, and sometimes Tilt, especially in Scotland.

This drift, as it lies on the surface of the earth, appears in a great variety of forms. It sometimes exists as a sheet of sand and gravel, spread over extensive areas. In other plains it forms ridges, mounds, and hills of comparatively low elevation, like what are sometimes called moraines. A portion of it is often found to cap or crest the summits of lofty mountains and abrupt escarpments. On some plains and in some lowland valleys, they divide and radiate, as it were, in broad streams, running from some mountain chain as their origin. In deep valleys they constitute

a series of terraces, as if they had been beaches originating in the gradual and succcessive elevation of a sea coast.

These drifts are as diversified in their composition as they are various in form and place. They are divided into two classes. The first consists of drift which has originated from local circumstances, and is known by containing pebbles, boulders, and clays, which are derived from the formation of rocks about which it is found. The second consists of drift which has been transported from distant rocks, and which is formed chiefly of fragments of older formations. It is sometimes made up of the detritus of rocks of all ages, intermingled promiscuously, and varying in lithological character from loam, sand, gravel, and pebbles, to large boulders and to huge masses of rock many tons in weight.

Since these drifts vary so exceedingly in mineral composition and structure, it is evident that they have been accumulated under dissimilar circumstances, and must belong to very different geological epochs. No epoch in geological time can be called the Drift Period; for some of the most ancient eras furnish us with records of similar phenomena of transport of materials. For instance, the conglomerates of the old red sandstone in the western Highlands of Scotland, and in south Wales, present an enormous aggregation of boulders of considerable size and magnitude. In the neighbourhood of Oban, in the Highlands, such an aggregation of boulders is seen in juxtaposition with erratic blocks of granite, which granitic blocks have evidently been subjected to very great friction, which has greatly reduced them from their original shape and dimensions. The fossiliferous rocks of Wigtonshire in Scotland present remarkable beds of conglomerates, consisting, among smaller boulders, of rounded blocks of four or five feet in diameter, regularly interstratified with the other beds. In Ireland, also, the silurian conglomerates of Connemara contain blocks of great magnitude. These facts teach you two important lessons in geology: first, that the transport of such blocks to their present position can be assigned only to the agency of water; and secondly, that this agency must have been exerted in different geological epochs.

The proofs of difference of epoch are strengthened by the variety of circumstances in which the drifts are found. Some of them have all the appearance of being ancient shingles, or sea beaches, forsaken by the ocean in consequence of an elevation of the land. Others look as if they were sheets of detritus that were spread along a coast under shallow water, or on the borders of large rivers or lakes and estuaries. When they appear in the form of ridges or mounds of debris, they seem to have been heaped up by some sudden deluge or powerful flood, that has swept over low parts of the country, or perhaps by subaqueous currrents, or deep streams in the ocean, acting on the bottom of a sea not very far from land. When a drift contains, embedded amid its gravel, large and massive boulders of ancient and remote rocks, they have every appearance of having been removed, first by the agency of glaciers, and then borne by icebergs floating in the sea, until the melting iceberg deposited them where we find them.

When a fragment of rock is of greater dimensions than a very large pebble or a very big stone, it is called a boulder. When such boulders are found at great distances from a rock of the same mineral character, they are called erratic boulders, or blocks. These boulders appear sometimes rounded as if they had been worn either by friction with other pebbles, or by having been rolled by a current to great distances: at other times they are rugged and angular, as if they had just fallen from a weather-worn cliff. On account of this distinction in their form, some geologists regard them as two separate classes of phenomena,—the boulder formation being rounded and worn by friction, the erratic blocks being angular. Both rounded and angular boulders are frequently of very great size and in great abundance. In one district, these huge masses are embedded in the alluvial sands and gravel; in others, enormous blocks are found lying exposed on the surface, and as bare as when they were left there by the retiring waters. Many of them are of such magnitude as almost entitles them to be called rocks, being from twenty to forty feet high, and of many hundreds of tons in weight.

The transport of these massive boulders for many hundreds of miles, from north to south, and their wide spread distribution over thousands of miles from east to west, on the northern hemisphere of the earth, have tasked all the sagacity and the science of the most skilful geologists of Europe and America to account for it.

At the present day the majority of geologists agree to combine the actions of three agents as probable means by which the transport of large boulders has been effected. These three agents are glaciers, floating ice, and currents of water. In the recognition of the efficiency of these three agents, the most scientific and practical find considerable difficulty in distinguishing the operations of one agent from the other, or in assigning to each agent its own share in the transport. A great number of the difficulties in this problem would be obviated, if it were granted that such boulders as are found at great heights were transported there by sea currents that bore floating icebergs. These icebergs were enormous fragments of the glaciers which first brought such blocks from their original cliffs down to the level of the sea. As, however, our present chapter is upon the action of *water* on the earth's crust, this lesson, though the concluding section of that chapter, cannot extend to a consideration of what is called the Glacial Theory. The action of ice and other atmospheric agents on the earth's crust is of sufficient importance and distinctness to engage a chapter of its own.

In some countries the boulders do not lie far from their parent rocks, and, therefore, their course and origin are easily traced and ascertained; but over vast areas of America, Europe, and Asia, the water-worn blocks appear to have been derived from very remote regions. The boulders are distributed in such a manner as to show that their transport could not have taken place under the existing conditions of sea and land. The transport and the distribution of them must have been effected when what is now dry land was beneath the sea, and when deep and wide ocean currents and floating icebergs were in operation. By the operation of subaqueous currents in the ocean, what we see as accumulations of sand, mud, and gravel, may have been deposited. By the agency of icebergs, the blocks and boulders, which are now found at immense distances from their parent rocks, may have been transported and deposited. These operations of icebergs will be further explained in your future lessons.

The course which this drift has taken is almost uniform. In the northern part of America, Europe, and probably of Asia, the course appears to have been from north and north-west to south and south east. This fact seems to intimate that all the materials of the drift or boulder formation had been brought by polar currents from the northern to the southern districts. It is on this account that the formation has been sometimes called the Northern Drift. Wherever it is found, it seems to prove that powerful masses of water have proceeded from north to south over vast areas of the northern hemisphere, and that these currents moved with sufficient velocity to transport large and ponderous masses of rock. It was to be expected that the course of such drifts would be much modified and obstructed among the valleys, hills, and mountains which it encountered.

In England the most important drifts may be divided into three groups:—

I. The Silurian group, which overlies the geological district of that name on the English and Welsh border. This drift is of local origin, and consists of fragments of rocks of that formation.

II. The western group which lies to the west of the ridge of mountains called the Backbone of England,—a ridge which commences in Staffordshire and strikes up through Derbyshire and Yorkshire towards Scotland. This group extends southward from Lancashire, over Cheshire, Shropshire, Worcestershire, Gloucestershire, and other midland counties. It is composed of rounded fragments of the crystalline mountains and trap rocks, which constitute the lofty escarpments of Westmoreland, Cumberland, and Dumfrieshire.

III. The Eastern group, comprising the various deposits which strew our north-eastern coast and the adjacent districts with fragments of rocks that have the same mineral character with mountains now existing in Norway and Sweden. These fragments must have been furnished, either by the rocks of those countries, or by land which once occupied the present bed of the German Ocean.

It would be impossible for me, in one lesson, to point out to you the startling and remarkable phenomena developed by the drifts of your own country. I will just give you an assortment of the facts connected with the western and the eastern groups of drift.

Take a journey from Bristol towards Liverpool and Lancaster. When you have come to the vale of the Severn, near the Clent Hills between Worcester and Birmingham, you find the surface of the country for miles upon miles, covered by a wide-spread stratum, containing huge boulders of granite and rounded pebbles of quartz. Where have they come from? And how were they brought here? All these granite boulders are from the granite rocks of Dumfrieshire and Kirkudbright in Scotland. All this region, and many of the districts of central England, were once a broad ocean sound, that

ran nearly parallel to the Irish Channel. On both sides of this sea there was land. Wales had its head above the water to the west of it and the Cotteswold Hills of Gloucestershire rose above it in the east. The bottom of this sound, and its shores, east and west, are covered with granite drift; but, mark the lesson which this drift tells—there is not a particle of this Scotch drift to be found either on the Welsh mountains and the Malverns to the west of it, or on the Cotteswold Hills on the east. The drift, where it now lies, marks the entire course of the central channel. It lies thick in Lancashire, Cheshire, Shropshire, Staffordshire, and Worcestershire. In some localities it has a depth of a hundred and fifty feet. In other localities it forms small hills of an elevation from fifty to five hundred feet above the level of the sea.

This sound was deep and large. Its eastern shores extended far into the midland counties of England. Its waves beat against the Malverns on one side, and against the Cotteswold on the other. At that time the Wrekin in Shropshire rose above the waves like an island, and the river Severn was purely a Welsh river that entered this sea between the Breiddyn hills and Oswestry in Shropshire.

But how came these pebbles of quartz and these boulders of granite into this sound? Along this broad sea, every spring, when the northern ice began to break up, huge icebergs or icefloes came drifting in shoals from the Scottish coast, loaded beneath with the granite blocks which they had enveloped when they were being formed in friths and estuaries in the north. As the icefloes floated along, driven by wind or tide, the loosened boulders dropped on the sea bottom. In one place scores of them fell down in comparatively still water. In another place hundreds were precipitated where the conflicting tides dashed fierce and strong. So great is the abundance of these granitic boulders in the south-western parts of Staffordshire, that a strange geologist would feel persuaded that he was approaching the foot of some vast range of granite rocks; and yet the source of all these boulders is one hundred and fifty miles distant.

Another remarkable circumstance in this drift is that the quartz rock of the Lickey Hills between Birmingham and Worcester have furnished immense beds of pebbles, which have been strewn over areas in Warwickshire and Oxfordshire, down even into the valley of the Thames, which extend to the great gorge of the Chalk Downs near Reading, where they stop.

Examples of the eastern group of drifts in England are found on the coasts and flanks of all the districts ranging from the mouth of the Thames to the Shetland Isles. In these districts may be seen gravels, pebbles, and massive boulders of rocks of such a mineral composition as would be derived only from Norway and Sweden, where similar rocks are known to exist.

In the immediate vicinity of London, and near Highgate, is Muswell Hill, a spot which supplies a very instructive example of a ridge of drift, deposited probably by an icefloe. This hill is capped by an alluvial bed of pebbles, boulders, and fossils, of rocks of nearly all ages, from the chalk down to the carboniferous limestone below the coal measures. The geologists of Highgate have collected at Muswell Hill hand specimens of the chalk, the oolite, the lias, new red sandstone, and mountain limestone, of gneiss, granite, and other primary rocks. I wish you to mark that none of these granitic pebbles are found on the western side of Highgate, or in any part of the valley of the Thames between Hampstead and the Surrey Hills.

At Holderness, on the Yorkshire coast, there are fragments of rock, varying in roundness and size, which appear to have been transported, some from Cumberland, some from the Highlands of Scotland, and some from Norway.

Scotland abounds with examples of drift. A rush of water over that country has left traces of its course in furrows, which the transported mineral substances, moving with great velocity, have cut in the solid rocks over which they passed. In the Shetland Isles, at Papa Stowe, there are fragments of rocks which must have travelled twelve miles from Hillswickness bearing north-east. At Soulam Voe, a place open to the Northern Ocean, there are boulders about three or four feet high which do not correspond with any rocks in the country, and were probably derived from the northward.

I content myself with giving you these few illustrations of drift formations as found in your own country. I cannot now give you even hints of these phenomena as found in North America, in Germany, and in Russia. When we come to lessons about ice and glaciers, drifts and boulders will again come under your consideration.

In terminating this chapter on the action of water on the earth's crust, I wish to prepare you for the facts which will be developed in the results of atmospheric agency by means of glaciers and floating icebergs.

Geologists who have studied drifts and erratic blocks most extensively agree in the conclusions:—1. That the boulder formation is not the work of a sudden transient action of a flood or debacle of short duration, but the result of operations that were going on during the age of what is called the middle tertiary. 2. That the greater part of the accumulations took place after the existing species of shellfish came to inhabit the adjoining seas, for their remains are found in the boulder clay. 3. That the transport of erratic blocks took place at a period subsequent to the age of the drift and boulders. 4. That the boulder and drift accumulations, and the erratic blocks which now cover the dry land, were all deposited on a sea bottom which has been afterwards upheaved. 5. That the erratic blocks must have been brought down from lofty mountains to an open sea that washed their bases by glaciers. 6. That these huge masses of rock were floated to great distances by masses of ice breaking off from these glaciers to form icebergs, which bore their contents in different directions from central points, and stranded them on the more elevated parts of the sea bottom, and without having subjected them to much friction. 7. That all such blocks can, in a great number of instances, be traced to their parent rock, though they are now separated by many hundreds of miles.

LESSONS IN GERMAN.—No. XLVIII.

VOCABULARY OF WORDS.—*(Continued).*

VII. FURNITURE. Mobilien.

Becher, *m.* -s, pl. -, tumbler, cup.
Bett, *n.* -es, -e, pl. -en, bed.
Bett'decke, *f.* -, pl. -n, coverlet.
Bett'lade, *f.* -, pl. -n, bedstead.
Betttuch, *n.* -es, -e, pl. -tücher, sheet.
Bla'sebalg, *m.* -es, -e, pl. -bälge, bellows.
Bü'cherbrett, *n.* -es, -e pl. -er, book-shelf.
Bücherschrank, *m.* -es, -e, pl. -schränke, book-case.
Bü'geleisen, *n.* -s, pl. -, smoothing-iron.
Caffero'l', *n.* -s, pl -e, saucepan.
Deckel, *m.* -s, pl. -, cover.
Eimer, *m.* -s, pl. -, bucket.
Faß, *n.* -sses, pl. Fässer, cask.
Fe'derbett, *n.* -es -e, pl. -en, feather-bed.
Feu'erstahl, *m.* -es, -e, pl. -stähle, steel.
Feu'erstein, *m.* -es, -e, pl. -e, flint.
Feu'erzange, *f.* -, pl. -n, tongs.
Feu'erzeug, *n.* -es, -e, pl. -e, tinder-box.
Fußbank, *f.* -, pl. -bänke, foot-stool.
Gedeck', *n.* -es, -e, pl. -e, cover.
Gemäl'de, *n.* -s, pl. -, picture.
Handtuch, *n.* -es, -e, pl. -tücher, towel.
Herd, *m.* -es, -e, pl. -e, hearth.
Holz'kohle, *f.* -, pl. -n, charcoal.
Käſtchen, *n.* -s, pl. -, box.
Keſſel, *m.* -s, pl. -, kettle.
Kerze, *f.* -, pl. -n, taper, candle.
Kiſte, *f.* -, pl. -n, chest.
Komode, *f.* -, pl. -n, chest of drawers.
Kopf'kiſſen *n.* -s, pl. -, pillow.
Korb, *m.* -es, e, pl. Körbe, basket.
Kron'leuchter, *m.* -s, pl. -, chandelier
Krug, *m.* -es, e, pl. Krüge, jug, pitcher.
Kübel, *m.* -s, pl. -, pail, tub
Küch'engeſchirr, *n.* -es, -e, pl. -e, kitchen utensil.
Lampe, *f.* -, pl. -n, lamp.
Laterne, *f.* -, pl. -n, lantern.
Licht, *n.* -es, -e, pl. -er, (See Kerze.)
Lichtputze, *f.* -, pl. -n, snuffers.
Mörſer, *m.* -s, pl. -, mortar.
Pfanne, *f.* -, pl. -n, pan.
Pfef'ferbüchſe, *f.* - pl. -n, pepper-box.
Pfropfen, *m.* -s, pl. -, cork.
Pfrop'fenzieher, *m.* -s, pl. -, cork-screw.
Pfühl, *m.* -es, -e, pl. Pfühle, bolster.
Polſter, *n.* -s, pl. -, bolster.
Pult, *n.* -es, -e, pl. -e, desk.
Rahmen, *m.* -s, pl. -, frame.
Salzfaß, *n.* -sſes, pl. -fässer, salt-cellar.
Schachtel, *f*, -, pl. -n, (See Käſtchen.)
Schaufel, *f.* -, pl. -n, shovel.
Schaum'löffel, *m.* -s, pl. -, skimmer.
Schirm, *m.* -es, -e, pl. -e, screen.
Schrank, *m.* -es -e, pl. Schränke, cupboard.
Schublade, *f.* -, pl. -n, drawer.
Schür'eiſen, *n.* -s, pl. -, poker
Schwe'felhölzchen, *n.* -s, pl. -, match.
Seife, *f.* -, pl. -n, soap.
Senftopf, *m.* -es, -e, pl. -töpfe, mustard-pot.
Serviette, *f* -, pl. -n, napkin
Sieb, *n.* -es, -e, pl. -e, sieve.
Sopha, *n.* -s, pl. -s, sofa.
Steinkohle, *f.* -, pl. -n, coal.
Suppenſchüſſel, *f.* -, pl. -n, tureen.
Teppich, *m.* -s, pl. -e, carpet.

Tiegel, *m.* -s, pl. -, skillet.
Tischtuch *n.* -es, -s, pl. -tücher, table-cloth.
Topf, *m.* -es, -s, pl. Töpfe, pot.
Trichter, *m.* -s, pl. funnel.
Wand'leuchter, *m.* -s, pl. -, sconce.
Wärm'flasche, *f.* -, pl. -n, warming-pan.
Wasch'becken, *n.* -s, pl. washbowl.
Wiege, *f.* -, pl. -n, cradle.
Zuck'erdose, *f.* -, pl. -n, sugar-box.
Zunder, *m.* -s, tinder.

VIII. DISHES. Gerichte.

Confect', *n.* -es, -s, comfit, sweatmeats.
Ei, *n.* -es -s, pl. -er, egg.
Ei'erkuchen, *m.* -s, pl. -, omelet.
Erfrischung, *f.* -, pl. -en, refreshment
Fleischbrühe, *f.* -, pl. -n, broth.
Gastmahl, *n.* -es, -s, pl. -mähler, banquet.
Ham'melfleisch, *n.* -es, mutton.
Ham'melkeule, *f.* -, pl. -n, leg of mutton.
Kalbfleisch, *n.* -es, veal.
Kalbs'cotelet'te, *f.* cutlet.
Kloß, *m.* -es, pl. Klöße, dumpling.
Nudel, *f.* -, pl. -n, vermicelli.
Och'senbraten, *m.* -s, pl. -, roast beef.
Och'senfleisch, *n.* -s, beef.
Pfann'kuchen, *m.* -s, pl. -, pancake.
Schinken, *m.* -s, pl. -, ham.
Schwei'nefleisch, *n.* -es, pork.
Suppe, *f.* -, pl. -n, soup.
Torte, *f.* -, pl. -n, tart.
Wurst, *f.* -, pl. Würste, sausage.

IX. GRAIN AND VEGETABLES. Getreide und Gemüse.

Blu'menkohl, *m* -es, -s, cauliflower.
Bohne, *f.* -, pl. -n, bean.
Erbse, *f.* -, pl. -n, pea.
Gerste, *f.* -, barley.
Gurke, *f.* -, pl. -n, cucumber.
Hafer, *m.* -s, oats.
Hirse, *m.* -n, millet.
Knoblauch, *m.* -es, -s, garlic.
Kohl, *m.* -es, -s, cabbage.
Korn, *n.* -es, pl. Körner, corn, grain.
Kraut, *n.* -es, -s, pl. Kräuter, herb.
Kresse, *f.* -, cress.
Linse, *f.* -, pl. -n, lentil.
Mais, *n.* -es, maize.
Meer'rettig, *m.* -es, -s, pl. -e, horse-radish.
Pastina'ke, *f* -, pl. -n, parsnip.
Peterśi'lie, *f.* -, parsley.
Pflanze, *f.* -, pl. -n, plant.
Pilz, *m.* -es, pl. -e, mushroom.
Radieß'chen, *n.* -s, pl. -, turnip-radish.
Reis, *m.* -es, rice.
Rettig, *m.* -es, -s, pl. -e, radish.
Roggen, *m.* -s, rye
Rübe, *f.* -, pl. -n, (brassica rapa); gelbe Rübe, carrot, rothe Rübe, beet, weiße Rübe, turnip.
Salbei, *f.* -, sage.
Sauerampfer, *m.* -s, sorrel.
Schwamm, *m.* -es -s, pl. Schwämme, (See Pilz).
Sell'erie, *m.* -s, celery.
Spargel, *m.* -s, asparagus.
Spinat, *m.* -es, -s, spinage.
Thy'mian, *m.* -s, thyme.
Trüffel, *f.* -, pl. -n, truffle.
Weizen, *m.* -s, wheat.
Wurzel, *f.* -, pl. -n, root.
Zwiebel, *f.* -, pl. -n, onion.

X. FRUITS AND FRUIT-TREES. Obst und Obstbäume

A'nanas, *f.* -, pl. -se, pine-apple.
Ap'felbaum, *m.* -es, -s, pl. -bäume, apple-tree.
Apfelsi'ne, *f.* -, pl. -n, sweet-orange.
Aprikо'se, *f.* -, pl. n, apricot.
Birnbaum, *m.* -es, -s, pl. -bäume, pear-tree.
Brom'beere, *f.* -, pl. -n, blackberry.
Citro'ne, *f.* -, pl. -n, lemon.
Dattel, *f.* -, pl. -n, date.
Erd'beere, *f.* -, pl. -n, strawberry.
Haselnuß, *f.* -, pl. -nüsse, hazelnut.
Hei'delbeere *f.* -, pl. -n, billberry
Himbeere, *f.* -, pl. -n, raspberry.
Johan'nisbeere, *f* -, pl. -n, currant.
Kasta'nie, *f.* -, pl. -n, chesnut.
Mandel, *f.* -, pl. -n, almond.
Maul'beere, *f.* -, pl. -n, mulberry.
Melo'ne, *f.* -, pl. -n, melon.
Mispel, *f.* -, pl. -n, medlar.
Pfir'siche, *f.* -, pl. -n, peach.
Pflau'menbaum, *m.* -es, -s, pl. -bäume, plum-tree.
Pomeranze, *f.* -, pl. -n, orange.
Quitte, *f.* -, pl. -n, quince.
Rosine, *f.* -, pl. -n, raisin.
Sta'chelbeere, *f.* -, pl. -n, gooseberry.
Strauch, *m.* -es, -s, pl. Sträuche, bush.
Wallnuß, *f* -, pl. -nüsse, walnut.
Weinstock, *m.* -es, -s, pl. -stöcke, grape-vine.
Weintraube, *f.* -, pl. -n, grape.

XI. FOREST-TREES. Waldbäume.

Ahorn, *m.* -s, pl. -e, maple.
Birke, *f.* -, pl. -n, birch.
Buche, *f.* -, pl. -n, beech.
Eiche, *f.* -, pl. -n, oak.
Esche, *f.* -, pl. -n, ash.
Espe, *f.* -, pl. -n, aspes.
Fichte, *f*, -, pl. -n, pine.
Lärche, *f.* -, pl. -n, larch.
Linde, *f.* -, pl -n, linden-tree lime-tree.
Pappel, *f.* -, pl. -n, poplar.
Rinde, *f.* -, pl. -n, bark.
Stamm, *m.* -es, -s, pl. Stämme, trunk.
Tanne, *f.* -, pl. -n, fir.
Ulme, *f.* -, pl. -n, elm.
Weide, *f.* -, pl. -n, willow.
Zweig, *m.* -es -s, pl. -e, bough.

XII. FLOWERS. Blumen.

Auri'kel' *f.* -, pl. -, auricula.
Distel, *f.* pl. n, thistle.
Geißblatt, *n.* -es, -s, pl. -blätter, honeysuckle.
Jasmin', *m.* -es, -s, jessamine.
Levko'je, *f.* -, pl. -n, gillyflower.
Lilie, *f.* -, pl. -n, lily.
Maiß'liebe, *f.* -, pl. -n, daisy.
Mohn'blume, *f.* -, pl. -n, poppy.
Myrthe, *f.* -, pl. -n, myrtle.
Nelke, *f.* -, pl. -n, pink.
Nessel, *f.* pl. -n, nettle.
Rit'tersporn, *m.* -es, -s, lark-spur
Rose, *f.* -, pl. -n, rose.
Schlüß'elblume, *f.* -, pl. -n, cowslip.
Son'nenblume, *f.* -, pl. -n, sunflower.
Tulpe, *f.* -, pl. -n, tulip.
Unkraut, *n.* -es, -s, weed.
Veilchen, *n.* -s, pl. -, violet.
Vergiß'mein-nicht, *n.* -es, -s, forget-me-not.

XIII BIRDS. Vögel.

Adler, *m.* -s, pl. -, eagle.
Amsel, *f.* -, pl. -n, blackbird.
Bachstelze, *f.* -, pl. -n, wagtail.
Buchfink, *m.* -en, pl. -en, chaffinch.
Distelfink, *m.* -en, pl. -en, goldfinch.
Dohle, *f.* -, pl. -n, jackdaw.
Drossel, *f.* -, pl. -n, thrush.
Elster, *f.* -, pl. -n, magpie.
Ente, *f* -, pl. -n, duck
Eule, *f.* -, pl. -n, owl.
Falke, *m.* -n, pl. -n, falcon.
Fasan, *m.* -en, pl. -en, pheasant.
Fledermaus, *f.* -, pl. -mäuse, bat.
Flügel, *m.* -s, pl. -, wing.
Gans, *f.* -, pl. Gänse, goose.
Habicht, *m.* -es, -s, pl. e, hawk.
Hänfling, *m.* -es, -s, *pl.* -e, linnet.
Huhn, *n.* -s, -s, pl. Hühner, hen.
Kanarienvogel, *m.* -s, pl. -vögel, canary-bird.
Krähe, *f.* -, pl. -n, crow.
Küchlein, *n.* -s, pl. -, chicken.
Kuckuck, *m.* -s, pl. -e, cuckoo.
Lerche, *f.* -, pl. -n, lark.
Nach'tigall, *f.* -, pl. -n, nightingale.
Papagei', *m.* -s, pl. -e, parrot.
Pfau, *m.* -en, pl. -en, peacock.
Rabe, *m.* -n, pl. -n, raven.
Raubvogel, *m.* -s, pl. -vögel, bird of prey.
Rebhuhn, *n.* es, -s, pl. -hühner, partridge.
Reiher, *m.* -s, pl. -, heron.
Roth'kelchen, *n.* s, pl. -, redbreast.
Schnabel, *m.* -s, pl. Schnäbel, bill.
Schwalbe, *f.* -, pl. -n, swallow.
Schwan, *m.* -es, -s, pl. Schwäne, swan.
Sperling, *m.* -es, -s, pl. -e, sparrow.
Storch, *m.* -es, -s, pl. Störche, stork.
Strauß, *m.* -es pl. -e, ostrich.
Taube, *f.* -, pl. -n, pigeon.
Truthahn, *m.* -es, -s, pl. -hähne, turkey.
Turteltaube, *f.* -, pl. -n, turtle-dove.
Wachtel, *f.* -, pl. -n, quail.
Waldschnepfe, *f.* -, pl. -n, woodcock.
Wasserhuhn, *n.* -es, -s, pl. -hühner, moor-hen.
Wasserschnepfe, *f.* -, pl. -n, snipe
Zaunkönig, -es, -s, pl. -e, wren.

XIV. QUADRUPEDS. Vierfüßige Thiere.

Affe, *m.* -n, pl. -n, ape.
Bär, *m.* -en, pl. -en, bear.
Biber, *m.* -s, pl. -, beaver.
Dachs, *m.* -es, pl. -e, badger.
Eichhörnchen, *n.* -s, pl. -, squirrel.
Frettchen, *n.* -s, pl. -, ferret.
Fuchs, *m.* -es, pl. Füchse, fox.
Füllen, *n.* -s, pl. -, colt.
Gemse, *f.* -, pl. -n, chamois.
Hase, *m.* -n, pl. -n, hare
Hirsch, *m.* -es, pl. -e, stag, deer.
Igel, *m.* -s, pl. -, hedge-hog.
Kanin'chen, *n.* -s, pl. -, rabbit.
Lamm, *n.* -es, -s, pl. Lämmer, lamb.
Löwe, *m.* -n, pl. -n, lion.
Marder, *m.* -s, pl. -, pole-cat.
Maulesel, *m.* -s, pl. -, mule.
Maulwurf, *m.* -es, -s, pl. -würfe mole.
Reh, *n.* -es, -s, pl. -e, roe.
Schwein, *n.* -es, -s, pl. -e, hog.
Tiger, *m.* -s, pl. -, tiger.
Wolf, *m.* -es, -s, pl. Wölfe, wolf.
Ziege, *f.* -, pl. -n, goat.

XV. FISHES. Fische.

Aal, *m* -es, -s, pl. -e, eel.
Auster, *f.* -, pl. -n, oyster.
Barsch, *m.* -es, pl -e, perch.
Bückling, *m.* -es, -s, pl. -e, red-herring.
Forelle, *f.* -, pl. -n, trout.
Garne'le, *f.* -, pl. -n, shrimp.
Hai, *m.* -es, -s, pl. -e, shark.
Häring, *m.* -es, -s, pl. -e, herring.
Hecht, *m.* -es. -s, pl. -e, pike.
Hummer, *m.* -s, pl. -n, lobster.
Kabeljau, *m.* -es, -s, pl. -e, haddock.
Karpfen, *m.* -s, pl. -n, carp.
Krebs, *m.* -s, pl. -e, craw fish.
Lachs, *m.* -es, pl. -e, salmon.
Muschel, *f.* -, pl. -n, shell.
Salm, *m.* -es, -s, pl. -e, (See Lachs).
Schellfisch, *m.* -es, s, pl. -e, haddock.
Schildkröte, *f.* -, pl. -n, turtle.
Schleihe, *f.* -, pl. -n, tench.
Stör, *m.* -es, -s, pl. -e, sturgeon.
Wallfisch, *m.* -es, pl. -e, whale.

XVI. INSECTS. Inſekten.

Ameiſe, *f.* -, pl. -n, ant.
Biene, *f.* -, pl. -n, bee.
Blut'igel, *m.* -s pl. -, leech.
Eidechſe, *f.* -, pl. -n, lizard.
Fliege, *f.* -, pl. -n, fly.
Floh, *m.* -es, -s, pl. Flöhe, flea.
Froſch, *m.* -es, pl. Fröſche, frog.
Grille, *f.* -, pl. -n, grasshopper.
Heuſchrecke, *f.* -, pl. -n, locust.
Hausgrille, *f.* -, pl. -n, cricket.
Käfer, *m.* -s, pl. -, beetle.
Kröte, *f.* -, pl. -n, toad.
Motte, *f.* -, pl. -n, moth.
Mücke, *f.* -, pl. -n, gnat
Natter, *f.* -, pl. -n, viper.
Otter, *f.* -, pl. -n, adder.
Raupe, *f.* -, pl. -n, caterpillar.
Schlange, *f.* -, pl. -n, serpent.
Schmet'terling, *m.* -es, -s, pl. -e, butterfly.
Schnecke, *f.* -, pl. -n, snail.
Spinne, *f.* -, pl. -n, spider.
Wanze, *f.* -, pl. -n, bug.
Weſpe, *f.* -, pl. -n, wasp.
Wurm, *m.* -es, -s, pl. Würmer, worm.

XVII. TOOLS. Werkzeuge.

Ahle, *f.* -, pl. -n, awl.
Amboß, *m.* -ſſes, pl. -e, anvil.
Angel, *f.* -, pl. -n, fish-hook.
An'gelruthe, *f.* -, pl. -n, fishing-rod.
An'gelſchnur, *f.* -, pl. -en, fishing-line.
Axt, *f* -, pl. Aexte, ax.
Beil, *n.* -es, -s, pl. -e, hatchet.
Brecheiſen, *n.* -s, pl. -, crow-bar.
Büchſe, *f.* -, pl. -n, rifle.
Dreſchflegel, *m.* -s, pl. -, flail.
Egge, *f.* -, pl. -n, harrow.
Feile, *f.* -, pl. -n, file.
Flinte, *f.* -, pl. -n, gun.
Gerüſt, *n.* -es, -s, pl. -e, scaffold.
Haue, *f.* -, pl. -n, hoe.
Hobel, *m.* -s, pl. -, plane.
Kelle, *f.* -, pl. -n, trowel.
Ladeſtock, *m.* -es, -s, pl. -ſtöcke, ramrod.
Leim, *m.* -es, -s, glue.
Leiter, *f.* -, pl. -n, ladder.
Meißel, *m* -s, pl. -, chisel.
Oblat, *f.* -, pl. -n, wafer.
Petſchaft, *n.* -es, -s, pl -e, seal.
Pflug, *m.* -es,-s, pl. Pflüge, plough.
Pinſel, *m.* -s, pl. -, brush, pencil.
Säge, *f.* -, pl. -n, saw.
Sandfaß, *n.* -ſſes, pl. -fäſſer, sand. box.
Schaufel, *f.* -, pl. -n, shovel.
Schleifſtein, *m.* -es, -s, pl. -e, grindstone.
Schloß, *n.* -ſſes, pl. Schlöſſer, lock.
Schraube, *f* -, pl. -n, screw.
Schraubſtock, *m.* -es, -s, pl. -ſtöcke, vice.
Schubkarren, *m.* -s, pl. -, wheel-barrow.
Senſe, *f.* -, pl. -n, scythe.
Sichel, *f.* -, pl. n-, sickle.
Sie'gellack, *m.* -es, -s, pl. -e, sealing-wax.
Spaten, *m* -s, pl. -n, spade.
Staffelei', *f.* -, pl. -en, easel.
Wage, *f.* -, pl. -n, balance.
Walze, *f.* -, pl. -n, roller.
Winde, *f.* -, pl. -n, pulley.
Zange, *f.* -, pl. -n, pincers.
Zirkel, *m* -s, pl. -, compasses.

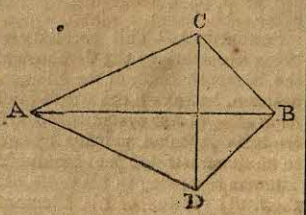
LESSONS IN GEOMETRY.—No. XIX.

LECTURES ON EUCLID.

EXERCISE TO PROPOSITION VII.

If two triangles on the same base, and on opposite sides of it, have their sides terminated in one extremity of the base equal, and likewise those terminated in the other extremity; the angle contained by the two sides of the one shall be equal to the angle contained by the two sides of the other.

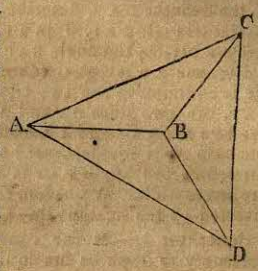
Fig. (H), No. 1.



In fig. (H), Nos. 1 and 2, let the two triangles, ABC and ABD, be upon the same base AB, and upon opposite sides of it; and let the two sides CA and DA, terminated in A, be equal to each other, and likewise the two sides BC and BD terminated in B. Then, the angle ACB is equal to the angle ADB.

Join CD. *Case First*:—When the straight line CD falls within the two triangles ACB and ADB. Because, in the triangle ACD, the side CA is equal to the side DA, therefore, by Prop. V., the angle ACD is equal to the angle ADC; for the same reason, the angle BCD is equal to the angle BDC. Therefore, by Axiom 2, the whole angle ACB is equal to the whole angle ADB.

Fig. (H), No. 2.



Case Second:—When the straight line CD falls without the two triangles ACB and ADB. In this case, it may be proved, as in the preceding one, that the angle ACD is equal to the angle ADC, and the angle BCD to the angle BDC; therefore, by Axiom 3, the remaining angle ACB is equal to the remaining angle ADB. Therefore, if two triangles, &c. Q. E. D.*

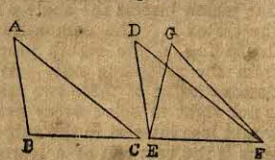
Scholium.—There is a third case of this proposition, namely, when the straight line CD, which joins the two opposite angles at C and D, falls neither within the triangles nor without them, but coincides with the two sides CB and DB, that is, when they happen to form but one straight line, and consequently to coincide with the straight line CD. In this case, the equality of the angles is at once inferred from the fifth proposition of this book.

PROPOSITION VIII.—THEOREM.

If two triangles have two sides of the one equal to two sides of the other, each to each, and have likewise their bases equal; the angle which is contained by the two sides of the one is equal to the angle contained by the two sides equal to them, of the other.

In fig. 8, let ABC and DEF be two triangles, having the two sides AB and AC equal to the two sides DE and DF, each to each, viz., AB to DE, and AC to DF; and also the base BC equal to the base EF. The angle BAC is equal to the angle EDF.

Fig. 8.



For, if the triangle ABC be applied to the triangle DEF, so that the point B shall be on E, and the base BC upon the base EF; then, the point C shall coincide with the point F, because, by hypothesis, BC is equal to EF. And BC coinciding with EF, BA and AC shall coincide with ED and DF. For, if the base BC coincides with the base EF, and the sides BA and AC do not coincide with the sides ED and DF, but have a different situation as EG and GF; then, upon the same base EF, and upon the same side of it, there can be two triangles having their sides terminated in one extremity of the base, equal to one another, and likewise those terminated in the other extremity; but this, by the preceding proposition, is impossible. Wherefore, if the base BC coincides with the base EF, the sides BA and AC cannot but coincide with the sides ED and EF. Therefore, the angle BAC coincides with the angle EDF, and is equal (*Ax.* 8) to it. Therefore, if two triangles, &c. Q. E. D.

Corollary.—It is a plain inference from the demonstration of this proposition, that if the three sides of one triangle be equal to the three sides of another triangle, each to each; the three angles of the one shall be equal to the three angles of the other, each to each, viz., those to which the equal sides are opposite. For, as it has been proved in the proposition, that the angle BAC is equal to the angle EDF; so it may be proved that the angle ABC is equal to the angle DEF, and the angle ACB to the angle DFE.

Scholium.—Pappus demonstrates this proposition without the aid of Prop. VII., by applying the base of the one triangle to the base of the other, and inverting the former, so that they shall correspond exactly to the terms of the proposition contained in the preceding exercise.

PROPOSITION IX.—PROBLEM.

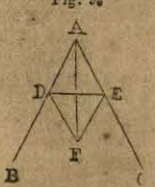
To bisect a given rectilinear angle, that is, to divide it into two equal angles.

In fig. 9, let BAC be the given rectilineal angle; it is required to bisect it.

* The first case of this exercise was accurately proved by C. L. Hatfield (Bolton-le-Moors); Quintin Pringle (Glasgow); E. C. Hughes and E. Russ (Islington); J. Jenkins (Pembroke Dock); F. H. (Brightwell); F. H. Williams (Salisbury); E. J. Bremner (Carlisle); and others.

Take any point D in AB, and from AC cut off AE (I. 3) equal to AD. Join DE. Upon DE, opposite to the triangle DAE, describe (I. 1) an equilateral triangle DEF. Join AF. The straight line AF bisects the angle BAC.

Fig. 9.



Because AD is equal (*Const.*) to AE, and AF is common to the two triangles DAF and EAF, the two sides DA and AF are equal to the two sides EA and AF, each to each; and the base DF is equal (*Const.*) to the base EF. Therefore the angle DAF is equal (I. 8) to the angle EAF. Wherefore the given rectilineal angle BAC is bisected by the straight line AF. Q. E. F.

Scholium 1.—In the construction of this problem, it is necessary to describe the equilateral DFE, upon the side of the line DE, opposite to that on which the triangle DAE stands; otherwise, there is evidently a case in which the construction would fail, namely, when the angle DAE is such that the triangle DAE is also an equilateral triangle. This necessary remark was overlooked by Dr. Simson, and is still overlooked in the common editions of Simson's Euclid up to the present day. It is but justice to add, that in Dr. Thomson's edition, and in the Gower-street edition, this remark is carefully noted. In the latter edition, it is also shown that in every other case but that of the angle of an equilateral triangle, the construction of the problem will be effected by describing the equilateral triangle DFE on the same side of the straight line DE as that on which the triangle DAE stands; and that in this construction, there will be two cases, one when the vertex F of the equilateral triangle falls within the given angle DAE, and another when it falls without that angle. Moreover, when this vertex falls within the angle DAE, the demonstration is precisely the same as the preceding one, word for word; but when it falls without, the straight line AF is not the part of the straight line which bisects the angle DAE, but its production through the vertex A. The demonstration of this case, although also depending on the eighth proposition of this book, is different from the preceding one. We leave the construction and demonstration of these two cases to our younger students. It is not right to solve every problem to them, otherwise they would lose interest in the subject. The self-solution of problems is the best test of a learner's actual knowledge; and the beauty of the study of geometry is this: that the student knows well when he has solved a problem with accuracy; for, if not, he will find that his master Euclid will condemn him at once wherever there is a flaw or defect in the demonstration.

Scholium 2.—It may be useful to observe that it is not necessary that the triangle DFE should be equilateral; it is enough that it be made isosceles, viz., that the side DF be equal to the side EF.

Scholium 3.—By means of this proposition, an angle may be divided into any number of equal parts denoted by the successive powers of the number 2, that is, into 2, 4, 8, 16, 32, 64, &c., equal parts; but to divide any angle into *three* equal parts, that is, to trisect an angle, is beyond the power of elementary geometry.

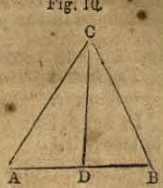
PROPOSITION X.—PROBLEM.

To bisect a given finite straight line, that is, to divide it into two equal parts.

In fig. 10, let AB be the given straight line. It is required to bisect it, that is, to divide it into two equal parts.

Describe upon AB (I. 1) an equilateral triangle ABC, and bisect (I. 9) the angle ACB by the straight line CD; let CD meet AB in the point D. Then, AB is divided into two equal parts at the point D.

Fig. 10.



Because the side AC is equal (*Const.*) to the side CB, and the side CD is common to the two triangles ACD and BCD, the two sides AC and CD, are equal to the two sides BC and CD, each to each; and the angle ACD is equal (*Const.*) to the angle BCD. Therefore the base AD is equal to the base (I. 4) DB; wherefore the straight line AB is bisected, that is, divided into two equal parts at the point D. Q. E. F.

Scholium 1.—In the construction of this problem, an isosceles triangle might have been employed instead of the equilateral triangle, ABC; a remark which may be useful in practice; but it is obvious that this method was not adopted by Euclid, because that he has not shown in his Elements how to construct an isosceles triangle previous to this proposition; neither indeed has he done it until he comes to the general problem of constructing a triangle whose sides shall be equal to any three given straight lines, under the restriction that any two of these straight lines must be greater than the third.

Corollary.—It may be inferred from this proposition, that if a straight line bisect the angle of an equilateral triangle, it also bisects the opposite side or base; and conversely, by applying the eighth proposition of this book, that if a straight line joining the opposite angle bisects the base, it also bisects the angle. This corollary may also be inferred concerning an isosceles triangle, provided the angle under consideration be that which is not opposite to either of the equal sides.

Scholium 2.—By this problem a straight line may be divided into any number of equal parts denoted by the series 2, 4, 8, 16, &c.

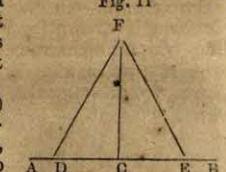
PROPOSITION XI.—PROBLEM.

To draw a straight line at right angles to a given straight line, from a given point in the same.

In fig. 11, let AB be a given straight line, and C a given point in it. It is required to draw a straight line from the point C at right angles to AB.

Take any point D in AC, and make (I. 3) CE equal to CD. Upon DE describe (I. 1) the equilateral triangle DFE, and join FC. The straight line FC drawn from the given point C, is at right angles to the given straight line AB.

Fig. 11



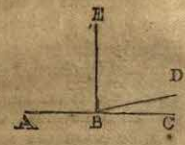
Because the side DC is equal (*Const.*) to the side CE, and the side CF is common to the two triangles DCF and ECF, the two sides DC and FC, are equal to the two sides EC and FC, each to each; and the base DF is equal (*Const.*) to the base EF. Therefore the angle DCF is equal (I. 8) to the angle ECF: and they are adjacent angles. But when the adjacent angles which one straight line makes with another straight line, are equal to one another, each of them is called a right (*Def.* 10) angle. Therefore each of the angles DCF and ECF is a right angle. Wherefore, from the given point C, in the given straight line AB, a straight line FC has been drawn at right angles to AB. Q. E. F.

Corollary.—Two straight lines cannot have a common segment, that is, they cannot coincide in part without coinciding altogether.

If it be possible, let the two straight lines ABC and ABD, have the segment AB common to both of them.

From the point B draw (I. 11) BE at right angles to AB.

Because ABC is a straight line, the angle CBE is equal (*Def.* 10) to the angle EBA. Because ABD is a straight line, the angle DBE is equal to the angle EBA. Therefore (*Ax.* 1) the angle DBE is equal to the angle CBE, the less to the greater, which is impossible. Therefore two straight lines cannot have a common segment. Q. E. D.



Scholium 1.—This corollary was added by Dr. Simson, as being necessary to the demonstration of the first proposition of the Eleventh Book of the Elements. In reference to that proposition, he says "the words [in the Greek] at the end of this, *for a straight line cannot meet a straight line in more than one point*, are left out, as an addition by some unskilful hand; for this is to be demonstrated, not assumed." The Dr. then says, "Mr. Thomas Simpson, in his notes at the end of the second [also in the fifth] edition of his Elements of Geometry, p. 262, after repeating the words of this note, adds: *Now can it possibly show any want of skill in an editor*, he means Euclid or Theon, *to refer to an axiom which Euclid himself has laid down* [Book I.; Axiom 10,] *and not to have demonstrated what no man can demonstrate?* But all that in this case can follow from that axiom is, that, if two straight lines could meet each other in two points, the parts of them betwixt those points must coincide, and so they would have a segment be-

twixt these common to both. Now, as it has not been shown in Euclid that they cannot have a common segment, this does not prove that they cannot meet in two points, from which their not having a common segment is deduced in the Greek edition: but, on the contrary, because they cannot have a common segment, as is shown in the Corollary to Prop. XI., Book I. (4to edition), it follows plainly that they cannot meet in two points, which the remarker says no man can demonstrate." Again, "He is mistaken in thinking the 10th Axiom he mentions here to be Euclid's; it is none of Euclid's, but is the 10th in Dr. Barrow's edition, who had it from Herigon's Cursus, vol. I., and in place of it, the Corollary of Prop. XI., Book I., was added."

It is not a little amusing, and it is very instructive, to see a little gentle skirmishing between two great geometers, Dr. Robert Simson and Mr. Thomas Simpson, the one a Scotchman, Professor of Mathematics in the University of Glasgow, and the other an Englishman, Professor of the Royal Military Academy at Woolwich. The former in the very passage from which we have only quoted what belongs to the point in hand, acknowledges the justice of the observations of the latter on another point, and states that he had corrected the error in a second edition. The fame of Dr. Simpson's Euclid has no doubt long eclipsed that of Mr. Simpson's Elements of Geometry; but in the latter work there are many excellent hints, and short and valuable demonstrations to which we, when learning ourselves, were very much indebted.

Scholium 2.—In Playfair's edition of the Elements, the above corollary is drawn from the defective definition of a straight line, which he has substituted for Euclid's.

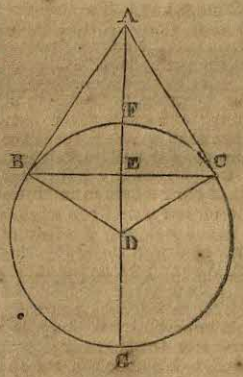
The solution of the exercises appended to this proposition will be given in our next lesson.

SOLUTIONS OF PROBLEMS AND QUERIES.

1. How many acres of the earth's surface may be seen from the top of a steeple 400 feet high, supposing the earth perfectly spherical, and its diameter 7,920 miles? See vol. I., p. 352.

2. How far above the surface of the earth must a man be elevated in order to see *one-fifth* of the surface of the globe? See vol. II., p. 44.

In order to solve these problems, let us suppose that in the adjoining figure, A is any point above the earth's surface; AG a vertical line passing through D the earth's centre; BFCG a circular section through the centre; FG its diameter; AF the altitude of the point A above the surface; the points B and C the limits of the visible horizon; AB and AC being tangents to the earth's surface at those points; BC the diameter of the base of the segment of the sphere made by a plane passing through the points B and C, and cutting the diameter FG at right angles in E, the centre of that base; the spherical surface of this segment, of which BFC is a vertical section through the axis or diameter FG, will be the portion of the earth's surface visible from the point A.



Now, let FG $= d$, FD or DC $= r$, BF $= n$, AF $= h$, and the fraction of the earth's surface visible from the point A $= \frac{1}{x}$. Also, let $3{\cdot}1416 = \pi$. Then, the surface of the sphere $= \pi d^2$, and the surface of the spherical segment $= \pi dn = \frac{1}{x} \times \pi d^2$; whence $n = \frac{d}{x}$.

But, by Euclid, Book VI., Prop. VIII., Cor., we have AD : DC :: DC : DE, or, $r+h : r :: r : r-n$; whence, $r^2 = (r-n)(r+h) = r^2 - rn + rh - hn$; therefore, $rh = (r+h)n = (r+h)\frac{d}{x}$; whence $h = \frac{2(r+h)}{x}$, and $x = \frac{2(r+h)}{h} = \frac{2r}{h} + 2$.

Here, let $h = 400$ feet, and $d = 7920$ miles $= 2r$. Then $x = \frac{7920 \times 5280}{400} + 2 = 104546$; whence, we find that the 104546th part of the earth's surface is visible from a height of 400 feet above the surface. Accordingly, $\frac{7920 \times 7920 \times 3{\cdot}1416}{104546}$ $= 1884{\cdot}924$ square miles, or $1884{\cdot}924 \times 640 = 1206351{\cdot}36$ acres, are visible from that height.

Again, since $h = \frac{2(r+h)}{x}$, we have $xh = 2r + 2h$, and $(x-2)h = 2r = d$; whence $h = \frac{d}{x-2}$.

Now, if $x = 5$, we have $h = \frac{d}{3}$, that is, a person must be raised to the height of *one-third* of the diameter of the earth above its surface, or 2,640 miles, in order to see *one-fifth* of that surface.

How far above the earth's surface must a man be raised to see one-half of that surface? *Ans.* To an infinite height. For, since $x = 2$, then $h = \frac{d}{2-2} = \frac{d}{0} = \infty$ (infinity).

How far above the earth's surface must he be raised to see the whole of that surface? *Ans.* He must be *lowered* to the bottom of the diameter, with his eye looking *upwards* within the sphere, supposing it like Wyld's model. For, since $x = 1$, we have $h = \frac{d}{1-2} = \frac{d}{-1} = -d$.*

CORRESPONDENCE.

HOW TO INCREASE THE CIRCULATION OF THE "POPULAR EDUCATOR."

(Tried and found useful.)

Mr. Editor,—I am a farmer's boy at present, residing at P——— Grange, and a student of the P. E. When I first came here, the people had not even heard of your excellent publication, and were much surprised to hear me speaking "*Gaelic*," as they designated Dr. Beard's Latin Lessons. I endeavoured as well as I was able to explain the advantages of the P. E., and was so far successful as to induce two of the ploughmen to become subscribers. The foreman and two more were won by my describing the advantage and value of the *arithmetic* and the *penmanship*. In short, the master's son took it for the *short-hand*; his two daughters for the *drawing* and *the music*; the *carpenter* and *the gardener* for *geometry, architecture*, and *botany*; and the master himself for a Library-book. Now, Mr. Editor, you have many farmer's boys and others as your scholars; what is to hinder them to go and do likewise, and be as successful as, yours truly, R. Read-about-it.

THE PYTHAGOREAN THEOREM.

Sir,—It appears to me, that in the new demonstration of the Pythagorean Theorem, inserted in No. 47 of the P. E., vol. II., it ought to be stated that the lines B M and A O (not A C, which is a misprint) should be drawn through the *greater* of the two squares described on the legs of the triangle opposite to the hypotheneuse; otherwise the solution is a failure, except as applied to that particular construction. The same remark will also apply to the solution given in No. 43, vol. II. I am, &c. Warin.

East Dereham.

[The criticism of our correspondent appears to be well-founded; we hope the authors of these demonstrations will look into the matter, and endeavour to remove the flaw.]

* The first question was solved by a Learner (Greenock); John Bates (Copley Mills); Unus (in Remoto Septentrione); S. Featherstone (Barnstaple); Dawson (Knaresborough); W. Spencer (Colne); J. Janson and J. Turner (Sunderland); W. Rickard (Sheerness); J. J. Newton (Bridgewater); H. Robinson (Sheerness); and others.

The second question was solved by H. Robinson (Sheerness); John Bates (Copley Mill); G. W. C. (Wigtonshire); Dawson (Knaresborough); J. S. (Ayrshire); J. J. Newton (Bridgewater); and others.

LESSONS IN MECHANICS.—No. XII.

NAVAL ARCHITECTURE—(*continued*).

PROGRESS OF STEAM NAVIGATION.

It may not be uninteresting to notice the gradual progress of steam navigation in connection with the subject of ship-building.

In the first year of the present century, Mr. William Symington, engineer, at the instance of Lord Dundas, made experiments on the application of steam to the propulsion of vessels on the Forth and Clyde Canal, which ended in the production of the *first practical steamboat*, named the Charlotte Dundas. In this vessel there was an engine, with the steam acting on each side of the piston (Watt's patent invention), working a connecting-rod and crank (Pickard's patent invention), which was united to the axis of Miller's improved paddle-wheel (Symington's patent invention, 1801). Thus had Symington the undoubted merit of having combined together, for the first time, those improvements which constitute the *present system of steam navigation*. In 1807, Mr. Robert Fulton, an American engineer, after having taken sketches and drawings of Mr. Symington's boat in Scotland, in 1801—as attested by the engineer left in charge of it—went to America and built the steamboat Clermont, which first plied between New York and Albany, and was reckoned the first steamboat that was put into actual practice in America or elsewhere; but it was only a copy of the Charlotte Dundas.

The first steamboat that was put in actual operation was the Comet, built by Mr. Henry Bell, of Helensburgh, in Dumbartonshire, in the year 1812. It began to ply for passengers upon the river Clyde, between Glasgow and Greenock, on the 5th of August of that year. It was a small vessel of thirty tons, and had an engine estimated at three-horse power. Mr. Bell had obtained a knowledge of the plans of Mr. Symington, and had communicated with Mr. Fulton on the subject. Thus at Helensburgh, in the Firth of Clyde, nearly opposite to Greenock—the birth-place of the illustrious Watt—and at a distance only of six miles, originated the first practical application of the modern steam-engine to the purpose of navigation, in Europe, and the invention, also, of his own countryman. Very soon after this period, steam navigation by paddle-wheels became general in Great Britain, and it thence extended over the Continent.

But not until fifty years after Symington's experiments was a steamer (the Great Western) expressly built for crossing the Atlantic.

Paddle-wheels were at first universal, but these have been almost entirely superseded by screw-propellers. Nearly all the marine engines displayed in the recent International Exhibition were made for screw-propellers. This is a tolerable clear settlement of the long-vexed question between the two methods of steam locomotion; but there can be little doubt that both, under particular circumstances, have their own distinct advantages. The Great Eastern is fitted up both with screw and paddles.

SCREWS AND PADDLES.

Of these two methods of propulsion, screws and paddle-wheels in general, we may here notice that—

The shaft of the paddle-wheel is placed at right angles with the keel; the faces of the paddle-wheels are, consequently, parallel to the keel. They are in pairs, one at each side of the vessel. They are outside the hull, the upper part being inclosed within a paddle-box, only the lower part of the wheel being submerged. The paddle-shaft is carried on either side beyond the planking of the vessel; the wheels are sustained by it, and revolve with it. The wheels are constructed on much the same principle as the ordinary water-wheel (undershot), having attached to their rims a number of flat boards, known as *paddle-boards*. As the wheel revolves, these boards strike the water in a direction contrary to that in which it is intended the vessel should be propelled. There are two cranks on the paddle-shaft, placed at right angles to each other, so that when either is in its highest or lowest position, the other shall be horizontal. They are usually driven by two steam engines.

The screw extends from one end of the vessel to the other; its shaft is placed horizontally in the vessel, parallel to the keel, and immediately above it. The faces of the screws are sternwards, and at right angles with the keel. They are generally single wheels, within the vessel, under its hull, and near the stem. The screws are altogether submerged. The following description of the screw may serve to point out its peculiarities, and its advantages over the paddle wheel:—

"The screw-propeller is similar in form and mechanical principle to the hydraulic machine known as the screw of Archimedes. A cylinder, placed at the bottom of the vessel, and in the direction of the keel, is surrounded by the spiral blade, precisely similar to the thread of a common screw, but projecting from it, instead of being cut into its surface. If such a screw were turned in a solid, it would move forward through a space equal to the distance between two contiguous threads in each revolution; but the water, not being solid, yields more or less to the reaction of the screw, and, consequently, the screw moves forward through a space in each revolution less than the distance between two contiguous threads. The distance between two contiguous threads is technically called the *pitch* of the screw—a term, however, which is also sometimes used to express the angle formed by the blade of the screw with its axis, such angle supplying the means of calculating the distance between such contiguous threads. We shall here, however, use the term pitch in the former sense. The difference between the pitch of the screw and the space through which the screw actually progresses in the water in one revolution is called the *slip*. In the first vessels to which screw-propellers were applied, the screw consisted of a single spiral blade, which made one convolution only round the cylinder. This arrangement was subsequently modified, and two convolutions and a half of a double-threaded screw were used instead of one complete convolution of a single-threaded screw. This plan has been occasionally varied, a smaller fraction of a convolution being sometimes used. It is found in practice that the amount of the slip in general varies from one-tenth to one-twentieth of the pitch; that is to say, the actual velocity of the screw through the water is from one-tenth to one-twentieth less than it would be if the screw worked through a solid, or as an ordinary screw in its nut."

Whatever be the form or mode of fitting up the screw, the effect is that the screw, in driving the water sternwards, sustains a corresponding reaction, which takes effect upon the screw shaft, and produces an equal pressure forward. The force of this forward motion occasioned, when screw-propellers were as yet new to steam navigation, some serious difficulty, and various expedients have been tried to obviate the defect. Of the relative advantages of screw and paddle propellers, it appears that "in deep immersion the screw has an advantage over the paddle-wheel of one and a half per cent.; but that with medium immersion, the paddle-wheel has an advantage of from one and three-quarters to four and three-quarters per cent." It appears, therefore, that the screw-propeller has a certain advantage over the paddle when the vessel is deep in the water, and that, on the other hand, the paddle gains an advantage over the screw, in proportion as the immersion is less.

ANSWERS TO CORRESPONDENTS.

Inquirer.—It certainly is not *necessary* to learn French before you have acquired a knowledge of the English grammar, and we should think it very unadvisable. Dr. Beard's Lessons in English in our Popular Educator will assist you considerably.

A Post Label Collector.—The utility of the Penny Post is so universally acknowledged that it has been adopted in every one of the British dependencies. It has given an impetus to education, by exciting the desire, as it offers the means, of correspondence. Thus the number of writers is continually on the increase, and the revenue of the colonial post-offices is proportionably augmented. But the penny label is only applied to inland letters. It still costs sixpence to send an ordinary letter to Australia from England, or from Australia to England; still costs sixpence, eightpence, or one shilling and twopence to send or receive a letter from Canada. When shall we see realised the idea of a cheaper, and consequently more popular system, but withal a system that would pay as well? It would formerly have been regarded as highly preposterous to talk of our modern rates of postage. May we not, then, confidently look for the time when what is now regarded as impracticable shall be found not only practical, but profitable, and the ends of the earth be drawn closer together by an ocean penny post?

A Would-be Orator must study emphasis and clearness. It is not only what is said, but how it is said, that produces any great impression. Right emphasis, even in ordinary conversation, is most important. A story is told on this subject which very well illustrates this necessity. "Boy," said a visitor at the house of a friend, to his little son, "step over the way, and ask how *old Mrs. Brown* is." The boy performed the errand, and returned with the answer that Mrs. Brown declined to mention how *old* she was, and was surprised at such an inquiry being made! About clearness and distinctness of speech, there is a valuable hint in connection with a late prelate of the Church. He always spoke with the accent of a man of sense, such as he really was in a superior degree; but it was remarkable—and, to those who did not know the cause, mysterious—that there was not a corner of the church in which he could not be heard distinctly. The reason assigned is, that he made it an invariable rule to *do justice to every consonant, knowing that the vowels would speak for themselves*. Thus he became the surest and clearest of speakers. The hint is worthy of your consideration. The ordinary principles of the art are given in our "Hand-book of Elocution," which you can obtain post free for 1s. 1d.

LESSONS IN NATURAL HISTORY.—No. XIX.

QUADRUMANA—THE MONKEY TRIBES.

No genus of the lower animals has excited so much interest, or given rise to so much speculation, as the monkey tribes, composed of races having some resemblance to man. The manners and habits of monkeys in a wild state being shy and retired, their investigation requires a large expenditure of time and patience on the part of those who wish to obtain a knowledge of them. Hence much of the information we possess is derived, not from actual observation, but from report, and that under circumstances by no means favourable to the accuracy of science.

THE MONKEY TRIBE.

What must be the conclusions of the untutored mind of one who has had but occasional glimpses of an animal covered with shaggy hair, possessing a hideous resemblance of countenance and general proportions to man, and assuming positions and grimaces resembling the human? Under the influence of fear and terror, many a tale has been told of the individuals of this race naturally enough exaggerated in all its details.

Superstition has been another cause of distorted representation. In India, where it has imposed such extraordinary self-torture, and led so frequently to the awful sacrifice of human life, there has been presented to view a singular example of the most abject idolatry. In Ahmedabad, the capital of Guzerat, hospitals have been erected for the benefit of apes, where thousands of monkeys are kept in fancied ease and indulgence; and when another city of that country was taken by general Goddart, in

1780, he found it to contain as many monkeys as inhabitants, and these amounted to 40,000.

Animals of this race have even been raised to the rank of gods, and made objects of worship to human beings; yea gorgeous temples have been reared "a monkey to enshrine." One temple was fronted by a portico for receiving victims sacrificed to a monkey, and fronted by no fewer than 700 columns. It is stated that when the Portuguese plundered one of these monkey palaces in the island of Ceylon, they found the tooth of an ape in a small gold casket; and in such veneration was the relic held by the natives, that they offered 700,000 ducats to redeem it; but it was burnt by order of the viceroy. Such instances of gross superstition are too numerous and too deplorable to be further noticed.

A lamentable perversion of mind is apparent on the part of those who have contended that men and monkeys belong to the same species, and are no otherwise distinguished from each other than by circumstances which can be accounted for, on the principle of the different physical or moral agencies to which they have been exposed. Such was the theory of the late Lord Monboddo one the judges of the Court of Session, in Scotland. Estimable in the various relations of life, and for his high character as a lawyer and a judge, his works, (in no fewer than twelve volumes,) show that this was not his Lordship's only "crotchet;" for it is evident that he had an exclusive and somewhat intolerant admiration of the language, literature, and philosophy of the ancient Greeks; a preference for the imaginary virtues and happiness of the savage state; and a general credulity in favour of the marvellous.

In reference to his theory as to monkeys, we need only quote the language of Lawrence, one of our most eminent anatomists: "Such persons (as maintain this theory) are equally unacquainted with the structure of men and monkeys; they are not conversant with zoology and physiology, and therefore entirely destitute of the principles on which alone a sound judgment can be formed concerning the nature and capabilities and destiny of animals, as well as the laws according to which certain changes of character, certain departures from the original stock, may take place."

Other strange notions have been entertained in relation to monkeys. Bontius, a physician, gives a description of an ape, to which he assigns every grace and virtue, and affirms that these animals would speak were they not afraid of being compelled to labour. Gassendi states that one species of these creatures had an ear for music, and a capacity for learning the flute or the guitar. And even Linnæus, to whom the world is greatly indebted in the studies both of plants and animals, fancied that a monkey was not far below a man, and that he might be progressively refined.

Many errors may be avoided if we will only consent to bridle our imaginations; and much information may be gathered by a careful examination of the monkey tribes, which form so attractive a part of our zoological collections. A glance will show the accuracy of the term applied to them by naturalists – that of QUADRUMANA, and of their being described as *Quadrumanous* animals, from their being *four handed*. These animals generally possess thumbs, or members opposable to the fingers of both the fore and hind limbs, which enables them to grasp any object firmly with either, and renders them expert climbers.

A casual stroller through a menagerie must be exceedingly struck with their surprising agility, the powerful leaps they take, the modes in which they spring hither and thither, and the ease with which all these motions are performed; and from these circumstances it might be promptly inferred that the home of these creatures is among trees, and that they abound in the luxuriant forests of the tropics. Had any other termination of the arm been given them, such gambols could not have been performed; while their *quadrumanous* character is no less observable in the rapid action of their hands, and in the various purposes to which they are appropriated.

To see them in their usual state, we must visit the regions a portion of which our engraving represents. The richly-clothed and trackless forests of the tropics are filled with animals, but "afraid to glitter in the noon-tide beams," they court the grateful shade; and it is therefore only in some deep glade, that we can witness the gambols of a monkey at that period of the day.

But no sooner does the sun sink beneath the horizon, and the evening breezes reduce the temperature of the air, than these animals come forth, with a multitude of others, and display qualities which may amuse as well as inform. As the observer looks in one direction, he detects numerous little heads, with bright searching eyes, just protuding from behind the thick boughs and foliage—a sufficient proof that they are at once conscious and afraid. Others, meanwhile, are busy among the trees; they do not merely peep out, for they have no apprehension; they force themselves on observation, as showers of rotten branches, with fruit, flowers, and nuts, are falling all around. He may notice, too, not only the grotesque attitudes of this singular assemblage, but their grimaces, with the half threats of those in his immediate vicinity; and it may be, he may have dropped upon him whatever these creatures may find come readily "to *hand*." But the season of activity in a tropical forest is short; a few morning and evening hours of a genial heat are sufficient to satisfy all the wants of monkeys; and the blaze of a vertical sun, or a short twilight, again obliges them to seek the shade, or a place of rest.

Some tribes of South America are, on the contrary, nocturnal in their habits, remaining in complete inactivity during daylight, coming forth at night, and making the forest resound with their yells and howlings. Of one of these, called the "Red Howler," Waterton says: "Nothing can sound more dreadful than its nocturnal howlings. While lying in your hammock in these gloomy and insuperable wilds, you hear their howling at intervals from eleven o'clock at night till daybreak. You would suppose that half the wild beasts of the forest were collecting for the work of carnage. Now it is the tremendous roar of the jaguar, as he springs on his prey; now it changes to the terrible deep-toned growlings, as he is pursued on all sides by superior forces; and now you hear his last dying moan, beneath a mortal wound."

Monkeys are seldom seen at any distance from woods, and the species which inhabit craggy precipices, such as those in the neighbourhood of the Cape of Good Hope, in Barbary, and about Gibraltar, deviate from the type, become more quadrupedal in their form and actions, and have therefore been always placed last in our systems.

Mr. Waterton, the intelligent naturalist just cited, says, that monkeys, commonly so called, may be divided into three grand classifications: the *apes*, which have no tail; the *baboons*, which have only short tails; and the *monkeys*, which have long tails. The latter may again be ranged under two divisions: those with hairy and bushy tails, and those whose tails, towards the extremity, are without hair underneath. The former climb like squirrels, and make no use of the tail to help them from branch to branch; while those that have the tail bare underneath towards the end, find it of immense advantage to them in climbing. They apply it to the branch of a tree as though it were a supple finger, and frequently swing by it with perfect security like the pendulum of a clock. We shall shortly give a further account of these varied and remarkable creatures.

LESSONS IN ENGLISH.—No. XLVIII.

By JOHN R. BEARD, D.D.

NUMBER.

REGARD to *number* causes nouns to undergo a change. *Number* relates to the question whether a noun indicates *one* object, or more objects than *one*. If a noun indicates *one* object, it is said to be in the *singular* number; if a noun indicates *more* objects than one, it is said to be in the *plural* number. The word *singular* comes from the Latin singularis, *one only*, and has its representative in our term *single*; as, *a single star, a single city, a single act*, e. g.,

"No single man is born with a right of controlling the opinions of all the rest."

The word *plural* comes from the Latin plus, *more*, that is, *more than one*. The Greek, and some other languages, have what is called a *dual* number—a form, that is, which specifically signifies *two*.

The *plural* is formed by either a *change* in the noun, or by an *addition* to the noun.

1. *Plural formed by a change in the noun.* e. g., man, men; woman, women (pronounced *wimmen*). The changing of *a* in man into *e* in men, and the changing of *o* in *wo* into *ĕ* in *wi*, are agreeable to the usages of the German idiom, which changes *a, o, u*, in the singular, into *ä* (æ), *ö* (œ, e, i), *ü* (ue), in the plural; as, man, *a man*; manner, *men*.

Words compounded with *man*, if of English origin, take *men* in the plural, e. g.,

Singular.	*Plural.*
Englishman	Englishmen
Scotchman	Scotchmen
Dutchman	Dutchmen
Frenchman	Frenchmen
Churchman	Churchmen
Statesman	Statesmen

There are, however, some exotic (or foreign) words ending in man, which take their plural in *s*, e. g.,

Singular.	*Plural.*
Cayman (an alligator)	Caymans
German	Germans
Mussulmun (Moslem)	Mussulmuns (Moslems)
Norman	Normans
Ottoman	Ottomans
Roman	Romans
Talisman	Talismans

The reason why these last-mentioned nouns change *men* into *mans*, and not into *men*, is, that in them *man* is not the noun *man*, but merely a terminating syllable. You may ascertain whether or not the man is a terminating syllable by sundering it from what precedes, and considering whether the part from which it is sundered is an independent word, that is, has signification in itself. If it is an independent word, then the plural form is *men*; if it is not an independent word, the plural form is *mans*; e. g., the plural form of *German* is *Germans*, because *ger* gives no sense; but the plural form of *Frenchman*, is *Frenchmen* because *French* has a meaning.

The following are other nouns which form their plural by a change in the body of the word: e. g.,

Singular.	*Plural.*	*Singular.*	*Plural.*
Brother	brethren	Louse	lice
Cow	kine (cows)	Mouse	mice
Foot	feet	Tooth	teeth
Goose	geese	Die	dice.

Brethren has another form, namely, brothers; the former is employed in sacred subjects, the latter is employed on ordinary occasions.

Brethren is a double plural; one form is brether (now obsolete) (in German brüder), to this is added *n*, making a second form in brethre*n*. A similar formation is found in childre*n*, thus: *child*, *child-er* (still in use in the north of England), *child-er-n*.

The termination *n* or *en*, occurring in ox*en*, brethr*en*, childr*en* was once common in English, and is still common in German and Anglo-Saxon. Ben Jonson, in his English Grammar, makes a separate (his second) declension of nouns which form their plural by taking *n* at the end. He gives, as examples, *oxe*, *oxen*; *hose*, *hosen*. Other nouns had in his time the termination *n*, which, however, seems then to have been yielding to *s*, as he states that both forms were in use, namely,

Singular.	*Plural.*	
House	houses	housen
Eye	eyes	eyen
Shoo	shoes	shooen

2. *Plural formed by addition to the noun.*—Instances have already been given in which nouns form their plural by taking a letter or two letters at their end. Other instances have been given, in which the plural is indicated in the two specified manners, that is, by change in the word, and by addition to the word.

The ordinary addition for the plural is the letter *s*, having the hard sound of *z*, e. g.,

Singular.	*Plural.*	*Singular.*	*Plural.*
Sofa	sofas	Rope	ropes
Dog	dogs	Cake	cakes
Book	books.	Table	tables

E final was formerly not as now silent, but pronounced with a soft sound as a distinct syllable, as in these lines from Chaucer:—

"So pray I to God that none mis-writé thee."
"The Revé was a slender cholerike man."

In some words, the *e* is in the plural still pronounced. We say *cage* in one syllable, but *cages* is a dissyllable:—

WORDS MONOSYLLABIC IN THE SINGULAR, DISSYLLABIC IN THE PLURAL.

Singular.	*Plural.*	*Singular.*	*Plural.*
Cage	cages	Maze	mazes
Face	faces	Pledge	pledges
Rose	roses	Nose	noses

If the singular ends in *ch*, *sh*, *s*, *ss*, or *x*, the plural takes *es* instead of *s*, e. g.,

Singular.	*Plural.*	*Singular.*	*Plural.*
Church	churches	Chorus	choruses
Arch	arches	Glass	glasses
Wish	wishes	Fox	foxes

In some words of Greek origin the *ch* is pronounced like *k*; these words form their plural in *s*, e. g.,

Singular.	*Plural.*
Monarch	monarchs
Hierarch	hierarchs
Patriarch	patriarchs
Eunuch	eunuchs

Nouns ending in *o* have either *s* or *es*. The following with others take *s*:—

Singular.	*Plural.*	*Singular.*	*Plural.*
Domino	dominos	Seraglio	seraglios
Tyro	tyros	Octavo	octavos
Folio	folios	Quarto	quartos

From this, the general usage, the following deviate by forming the plural in *es*:—

Singular.	*Plural.*	*Singular.*	*Plural.*
Buffalo	buffaloes	Manifesto	manifestoes
Cargo	cargoes	Negro	negroes
Echo	echoes	Potato	potatoes
Grotto	grottoes	Volcano	volcanoes
Hero	heroes	Wo	woes

The *e* in the plural is for the most part a relic of an *e* formerly used in the *singular*; this is still ordinarily retained in woe. Latham is not borne out by fact when he says that the *e* in the plural is "an orthographical expedient for the sake of denoting the length of the vowel *o*;"* for *o* is as long in *folios* as in *potatoes*.

The ensuing fifteen words ending in *f*, *ff* and *fe*, change the hard *f* into the soft *v* before adding the *s*. This change is required by euphony; it would be difficult to pronounce *loafs*, therefore we say *loaves*.

Singular.	*Plural.*	*Singular.*	*Plural.*
Beef	beeves (nearly obsolete)	Self	selves
Calf	calves	Sheaf	sheaves
Elf	elves	Shelf	shelves
Half	halves	Staff	staves
Knife	knives	Thief	thieves
Leaf	leaves	Wife	wives
Loaf	loaves	Wolf	wolves
Life	lives		

Other nouns in *f*, *ff*, and *fe*, are regular, that is, they form their plural in the ordinary manner by taking *s*. e. g.,

Singular.	*Plural.*
Roof	roofs
Ruff	ruffs
Chief	chiefs
Fife	fifes

Nouns ending in *y*, immediately preceded by a consonant, change the *y* into *ie* before they take the *s* of the plural. e. g.,

Singular.	*Plural.*
Lady	ladies
Fly	flies
City	cities
Penny	pennies, pence

* "The English Language," by Robert G. Latham, M. D., F. R. S. Third edition, 1850; p. 228.

These nouns formerly had their singular in *ladie*, *flie*, *citie*, and thus formed their plural simply by *s* according to analogy.

Y after a vowel remains unchanged, and in the plural takes the usual *s*. e. g.,

Singular.	*Plural.*
Boy	boys
Key	keys
Journey	journeys
Attorney	attorneys

The statement that words of more than one syllable change *y* into *ies* in the plural is not well founded, and instead of *gallies*, *vallies*, *monkies*, the forms should be *galleys*, *valleys*, *monkeys*.

Words which come from foreign languages ought to retain their vernacular plurals. Many such words do retain their vernacular plurals. Others form their plurals after the English manner. A few are used both ways. Common sense dictates that so long as a word is not naturalised, it should keep its native form; but when a word is naturalised, that is, when a word has become thoroughly English by being in common use, then such word should follow English examples. The seventy-nine words which ensue, derived from the Hebrew, Greek, Latin, Italian, and French languages, retain in English their original plurals; those to which R is affixed, have also the English plural in *s*.

Singular. *	*Signification.*	*Plural.*
Amanue'nsis	*a secretary*	amanue'nses
Ana'lysis	*decomposing*	ana'lyses
Anti'thesis	*opposition*	anti'theses
Apex	*a point, top*	apices
Aphe'lion	*greatest distance from the sun*	aphe'lia
Appendix	*addition*	appe'ndices
Arca'num	*a secret*	arca'na
Auto'maton	*a self-mover*	auto'mata
Axis	*the pole on which a wheel turns*	axes
Ba'ndit	*a robber*	bandi'tti
Basis	*a foundation*	bases
Ca'lculus	*a small stone*	cá'lculi
Calx	*a reduction to powder by burning*	calces
Catachre'sis	*an abuse of words*	catachre'ses
Che'rub	*an angel*	cherubi'm
Colossus	*an immense statue*	colossi
Convo'lvolus	*bind weed*	convo'lvoli
Crisis	*a decisive condition*	crises
Crite'rion	*a means of discrimination*	crite'ria
Datum	*something granted*	data
Desidera'tum	*something wanted*	desidera'ta
Diae'resis	*the marks as in aër showing that two vowels coming together are to be separately pronounced*	dia'ereses
Dogma	*an opinion*	do'gmata R
Efflu'vium	*something flowing out of a body, a disagreeable odour*	effluvia
Ellipsis	*an omission*	ellipses
Emphasis	*force in utterance*	em'phases
Empo'rium	*a market*	empo'ria R
Enco'mium	*a eulogy*	enco'mia R
Ephe'meron	*a short lived animal*	ephe'mera
Erra'tum	*an error*	erra'ta
Focus	*a hearth, a centre of heat*	foci
Fora'men	*an opening*	fora'mina
Fo'rmula	*a form, model, direction*	fo'rmulae R
Forum	*a market place*	fora R
Fungus	*a mushroom*	fungi
Ge'nius	*a tutelary god*	genii
Ge'nius	*a man of high gifts*	geniuses
Genus	*a race or kind*	genera
Gymna'sium	*a place of exercise, a school*	gymna'sia
Hypo'thesis	*a supposition, theory*	hypo'theses
Igni's-fa'tuus	*will o'the whisp*	ignes-fa'tui
Index	*a pointer, a list of words,*	in'dices
Index	*a table of contents*	inde'xes
La'mina	*a thin piece of metal*	la'minae
Larva	*a doll, a grub*	larvae
Magus	*a magian, a magician,*	magi
Mausole'um	*a tomb*	mausole'a R
Me'dium	*a channel*	me'dia R
Memora'ndum	*something to be remembered, a note*	memora'nda R
Menstruum	*a dissolvent*	menstrua R
Mephi'tis	*a pestilential exhalation*	mephi'tes
Metamorphosis	*a change*	metamo'rphoses

* The accents as in Amanuénsis, Catachrésis, are put to show where in pronunciation the stress of the voice should be thrown.

Singular.	*Signification.*	*Plural.*
Mi'asma	*a noxious particle*	mia'smata
Mome'ntum	*moving power*	mo'menta
Monsie'ur	*Sir or Mr.*	messieu'rs
Narci'ssus	*the daffodil*	narci'ssi
Na'utilus	*the little sailor, the nautilus*	nau'tili
Ne'bula	*a litle cloud*	ne'bulae R
Oa'sis	*a green spot in the desert*	oa'ses
Pare'nthesis	*something put in, interposed*	pare'ntheses
Parhe'lion	*a mock sun*	parhe'lia
Perihe'lion	*the nearest distance from the sun*	perihe'lia
Phasis	*an appearance, a phase*	phases
Pheno'menon	*a natural appearance*	pheno'mena
Po'lypus	*many-footed, an ulcer*	po'lypi
Pre'mium	*a reward*	pre'mia R
Probo'scis	*an elephant's trunk*	probosci'des
Ra'dius	*a spoke of a wheel, half a diameter*	radii
Ranu'nculus	*a little frog, a herb*	ranunculi R
Sarco'phagus	*a stone coffin*	sarco'phagi
Sta'men	*the threads of a warp, string of an instrument, fibres*	sta'mina
Seraph	*an angel*	seraphi'm R
Sti'mulus	*a good impuls*	sti'muli
Stratum	*a layer*	strata
Thesis	*a position, a theme, a subject*	theses
Tu'mulus	*a mound, barrow*	tu'muli
Vertex	*the extreme point on which something turns, the top of the head, a top*	ve'rtices
Vortex	*a whirlpool*	vo'rtices
Virtuo'so	*a student of art*	virtuo'si

The following words are the same in the singular and the plural, viz. :—

Appar'atus, *preparation, a collection of instruments*
Census, *a numbering of the people*
Congeries, *a heap or pile*
Corps, (côre) *a body of soldiers*
Deer, *a stag*
Gallows, *an instrument for hanging criminals*
Sheep, *a woolly quadruped*
Species, *a race*
Swine, *a pig*
Hiatus, *a gaping, opening, an interval*
Impetus, *impulse, momentum*
Means, *method of obtaining anything*
News, *fresh information*
Pains, *labour, trouble*
Fish, *an aquatic animal and all kinds of fish, as cod fish, &c.*
Series, *a number of things placed in order.*

The word *alms* is commonly given as a noun plural in form, and either singular or plural in signification. The *s* however is not an inflexion, but belongs to the root, being retained from the Greek *eleemosyne*. *Alms* is rarely used in the singular. The *s* in *riches* is in the same way derived from its original, the French *richesse*.

Census and *apparatus* retain in English their Latin plurals, which are *census* and *apparatus*; the same remark may be made of *impetus*, *series* and *species*.

Corps, from the Latin corpus, corporis, *a body*, has the *s* from its root, and is really singular in form.

LESSONS IN GERMAN.—No. XLIX.

PART II.

As in the Lessons in French, so in these Lessons in German, we have a SECOND PART, to which we now call the attention of our students in German. The FIRST PART of the German course, which we concluded in our last number, contained a course of easy lessons by which the student was gradually introduced to a knowledge of the idioms and peculiarities of that language; but now he will have laid before him a systematic treatise on German Grammar, in which the rules of Etymology and Syntax will be explained, as a necessary sequel to the preceding part of the course. He should now, with the new light which this part will afford him, revise all his former lessons by the system of reference there pointed out, and thus endeavour completely to master the German language. The want of a Dictionary will of course be felt in the course of this revisal, notwithstanding the insertion of the useful vocabulary in the last two lessons. This want will be supplied as speedily as possible by the publication of a cheap German Dictionary, for the description of which, and its manner of publication, see our LITERARY NOTICES. With this Dictionary, and the Lessons in

German in the Popular Educator, including both the *first and second Part*, and a few good authors, our students will be enabled to become as well acquainted with the German Language as they are with the French, and will have it in their power to correspond with the German merchants of Europe, or to travel on the continent in any part where these languages are spoken; and they are not only the principal but the most universally known languages of Europe.

§ 1. ETYMOLOGY.

Etymology regards words as *individuals;* discloses their origin and formation; classifies them according to signification; and shows the various modifications, which they undergo in the course of declension and conjugation. The inflection of all parts of speech, except the Verb, is, in Grammar, called *declension:* the regular arrangement of the moods, tenses, numbers, persons, and participles of a verb, is called *Conjugation:* in a *general* way, however, *all* words capable of inflection are said to be *declinable*. The indeclinable parts of speech are often called *Particles.*

§ 2. Derivation and composition.

(1) In respect to derivation, all German words are divisible into three classes: *Primitives, Derivatives* and *Compounds.*

(2) The Primitives, which are also called *roots* or *radicals*, are all *verbs;* forming the basis of what are now generally called the irregular verbs, and of about fifty, or sixty others, which *were* once irregular in conjugation, but are so no longer. They are also all *monosyllables*; and are seen in the crude form, (so to speak,) by merely dropping the suffix (en) of the Infinitive mood: thus, binb(en,) to bind; ſchließ(en,) to close; fang(en,) to catch.

(3) From the primitives, sometimes *with*, sometimes *without*, any change in, or addition to the crude form, comes a numerous train of derivatives: chiefly *nouns* and *adjectives.*

Thus, from binb(en,) to bind, we get der Band, the volume, and der Bund, the league, where the derivatives are produced by a mere *vowel* change. The derivative is, also, often distinguished by a mere euphonic, or orthographic termination; changing the *form* indeed, but in no wise affecting the *sense.* The terminations employed, in this way, are er, el, en, e, be, te and et; thus, from ſprech(en,) to speak, comes die Sprache, speech, language. In some cases, moreover, in forming derivatives, the insignificant syllable ge is prefixed; as, gewiß, sure, certain; der Geſang, the song.

(4) But there is another and a most extensive class of derivatives, sometimes called *secondary* derivatives formed by the union of radical* words with suffixes, that *are significant:* thus, from heilig, (*holy, sacred;*) we get by adding en, the verb heiligen, to *make* holy, to consecrate. The suffixes of this class (the *significant* ones) are, however, most of them, used in forming nouns and adjectives. They will be found explain d under those heads respectively. Several of them are exactly the same in *form* as the terminations which are often added to *primary* derivatives. From these, (that is, from the merely orthographic endings,) the significant suffixes are to be carefully distinguished.

(5) Among the secondary derivatives must, also, be included those formed by means of *prefixes* as well as suffixes. These are mainly verbs, and are treated somewhat largely under the head of Compound Verbs.

(6) In respect to compounds, properly so called, that is, words formed by the union, not of prefixes and suffixes with radicals, but of radicals, or other independent words, one with another, the German is peculiarly rich. Not only is it rich in the abundance of such compounds already in use; but it possesses a rare facility of forming them, as occasions arise, out of its own resources.

(7) In forming these compounds, the two components are often merely joined together as one word; as, Uhrmacher, (from Uhr, a clock or watch, and Macher, a maker.) But in numerous cases, the union is marked by the insertion of certain letters, which may be called *letters of union:* thus,

Die Tod es noth, (from Tod, death, and Noth, need, agony;) the death-agony;

Das Himmel s licht, (from Himmel, heaven, and Licht, light;) the light of heaven;

Die Herz en s güte, (from Herz, heart, and Güte, goodness;) the goodness of heart;

Der Pferd e arzt, (from Pferd, horse, and Arzt, doctor;) the horse-doctor;

Das Hirt en leben, (from Hirt, shepherd, and Leben, life;) the pastoral-life;

Der Ei er kuchen, (from Ei, egg, and Kuchen, cake;) the omelet.

(8) Some of these letters of union are nothing more than the signs of the genitive case of the first component: others are mere euphonic additions.

(9) In some instances, the union of the parts of a compound is characterized by the *omission* of some letters; as, der Sonntag, (Sonn e, the Sun, and Tag, day;) Sunday; denkwürdig, (denk en, to think, and würdig, worthy;) worthy of thought.

(10) Finally, in all compounds, the main accent fall upon the *first* component which, always qualifies or defines the second, as containing the fundamental idea.

§ 3. Parts of speech.

(1) The parts of speech in German are usually reckoned ten: viz. Articles, Nouns, or Substantives, Adjectives, Numerals, Pronouns, Verbs, Adverbs, Prepositions, Conjunctions, and Interjections.

(2) Of these, *six*, namely, Articles, Nouns, Adjectives, Numerals, Pronouns and Verbs, are capable of *inflection;* that is, admit of changes of termination by which various modifications of meaning are expressed: the other *four*, namely, Adverbs, Prepositions, Conjunctions and Interjections, are in form *invariable.*

(3) All part of speech capable of inflection have two numbers: the SINGULAR, which denotes but one, and the PLURAL, which denotes more than one.

(4) All parts of speech capable of inflection, except the verb, have four CASES; namely the NOMINATIVE, GENITIVE, DATIVE, and ACCUSATIVE: also, three GENDERS; namely, the MASCULINE, the FEMININE and the NEUTER.

(5) Cases are variations made in the form of a word, to indicate its several relations to other words: the nominative being that form which denotes the *subject* of a verb; the genitive that which is chiefly used in signifying *source* or *possession;* the dative that which indicates the person *to* whom, or thing *to* which an action is directed; and the accusative that which points to the *immediate* or *direct* object of an action.

The cases in German correspond well to those in the Latin language. The *Vocative*, however, is never counted, because it is exactly the same in form as the nominative; while the *Ablative* (as in Greek,) is wholly wanting: its place being generally supplied by the Dative (with a suitable preposition).

§ 4. The article.

(1) There are two articles in German: the Definite, der, *the;* and the Indefinite, ein, *a* or *an.* They are inflected thus:

	Singular.			*Plural.*
	Masculine.	*Feminine.*	*Neuter.*	*For all genders.*
Nom.	Der,	die,	das, the;	Nom. Die, the;
Gen.	Des,	der,	des, of the;	Gen. Der, of the;
Dat.	Dem,	der,	dem, to, or for the;	Dat. Den, to, or for the
Acc.	Den,	die,	das, the.	Acc. Die, the.

	Singular.		
	Masc.	*Fem.*	*Neut.*
Nom.	Ein,	eine,	ein, an, or a;
Gen.	Eines,	einer,	eines, of an, or a;
Dat.	Einem,	einer,	einem, to, or for an, or a;
Acc.	Einen,	eine,	ein, an, or a.

This article has no plural.

(2) In familiar style, certain prepositions are frequently contracted with the dative and accusative of the definite article into one word.

* The word *radical*, however, in *this* place, is designed to indicate *any* word capable of assuming a suffix. In this loose sense, the word is often employed for the sake of convenience.

EXAMPLES.

D. am,	for an dem,	as, am Feuer, at the fire;
A. ans,	for an das,	as, ans Licht, to the light;
D. aufm,	for auf dem,	as, aufm Thurm, on the tower;
A. aufs,	for auf das,	as, aufs Haus, upon the house;
D. beim,	for bei dem,	as, beim Vater, with the father;
A. durchs,	for durch das,	as, durchs Waſſer, through the water;
A. fürs,	for für das,	as, fürs Geld, for the money;
D. hinterm,	for hinter dem,	as, hinterm Hauſe, behind the house;
D. im,	for in dem,	as, im Himmel, in (the) heaven;
A. ins,	for in das,	as, ins Haus, into the house;
D. vom,	for von dem,	as, vom Uebel, from (the) evil;
A. vors,	for vor das,	as, vors Fenſter, before the window;
D. vorm,	for vor dem,	as, vorm Thore, before the door:
D. überm,	for über dem,	as, überm Feuer, upon the fire;
A. übers,	for über das,	as, übers Land, over (the) land;
D. unterm,	for unter dem,	as, unterm Waſſer, under (the) water;
D. zum,	for zu dem,	as, zum Fluſſe, to the river;
D zur,	for zu der,	as, zur Ehre, to the honour;

§ 5. Nouns.

(1) In German, as in English, the nouns, that is, the *names* of persons and things, are divided into two great classes: viz.: *Common nouns*, which designate sorts, kinds, or classes of objects; and *Proper nouns*, which are peculiar to individuals.

The student will bear in mind the following rules:

a. In German all *Nouns*, as also all parts of speech when used as nouns, begin with a capital letter. Ex.: 1. Der Sohn, the son; die Tochter, the daughter. 2. Der Gute, the good (man); die Gute, the good (woman). 3. Das Singen, the singing.

b. Also: *The Indefinite Pronouns.* Ex.: Jemand, (any body, somebody). Jedermann, (every body). Etwas, (anything, something), and Nichts, (nothing).

Note, that when Etwas and Nichts are connected with a noun, or with an adjective used as a noun, they do *not* begin with a capital. Ex.: Er hat etwas Brod, he has *some* bread; er hat nichts Gutes, he has *nothing* good.

c. Also: *The absolute Possessive Pronoun* (when used substantively. Sect. 21. II.) Ex.: Die Meinigen, (my family); das Meinige, (my property).

d. Also: *The Indefinite Numerals*, when used without a substantive. Ex.: Alles, Alle, (all); Einige, (some); Mancher, (many a); Viele, (many).

e. Also: *The Personal Pronouns*, Du, Ihr, (thou, you), &c., when we would distinguish thereby the person addressed.

f. Also: Ein, when an adjective, and likewise, when a pronoun as distinguished from the article. Ex.: Ich habe nur Einen Freund, I have only *one* friend. Das Eine Pferd iſt blind, das andere iſt lahm, the *one* horse is blind, the other is lame.

g. Lastly, Adjectives derived from names of persons. Ex.: Das Schillerſche Haus. Observe that adjectives derived from the names of countries do *not* begin with a capital. Ex.: Der deutſche Bund, the German confederacy. Die franzöſiſche Sprache, the French language.

(2) Under the head of common nouns are commonly included several subdivisions; as *Collective nouns*, which are the names of a *plurality* of individuals considered as *unity*; and *abstract nouns*, which are the names of certain qualities, or attributes regarded as separate from any given substance.

(3) The nouns, both common and proper, as before said, are regularly inflected: thus exhibiting by means of terminations the several modifications of gender, number and case. The numbers and cases will be made sufficiently clear under the head of declension of nouns.

Il ne faut pas avoir honte de demander ce qu'on ne sait pas.—*Maximes des Orientaux.*

Il faut aimer à être caché pour pouvoir se produire plus sûrement; il faut aimer à se taire pour pouvoir parler discrètement; il faut aimer à apprendre pour pouvoir enseigner utilement; il faut aimer à obéir pour pouvoir commander sagement.—*Thomas à Kempis.*

L'hypocrisie est un hommage que le vice rend à la vertu.—*La Rochefoucauld.*

Il n'y a pas de métier ni de profession qui n'ait ses grimaces et son jargon.—*Christine.*

LESSONS IN FRENCH.—No. LIX.

By Professor Louis Fasquelle, LL.D.

§ 56.—Conjugation of Reflective Verbs [§ 43, (6.)]

MODEL VERB.

SE FLATTER, *TO FLATTER ONE'S SELF.*

Indicative Mode.

PRESENT.

Je me flatte,	*I flatter myself*
Tu te flattes,	*thou flatterest thyself*
Il se flatte,	*he flatters himself*
On se flatte,	*one flatters himself* or *one's self*
Nous nous flattons,	*we flatter ourselves*
Vous vous flattez,	*you flatter yourselves*
Ils se flattent,	*they flatter themselves*

IMPERFECT.

Je me flattais,	*I was flattering* or *used to flatter myself.*
Tu te flattais,	*thou wast flattering thyself*
Il se flattait,	*he was flattering himself*
On se flattait,	*one was flattering one's self, himself*
Nous nous flattions,	*we were flattering ourselves*
Vous vous flattiez,	*you were flattering yourselves*
Ils se flattaient,	*they were flattering themselves*

PAST DEFINITE.

Je me flattai,	*I flattered* or *did flatter myself*
Tu te flattas,	*thou didst flatter thyself*
Il se flatta,	*he flattered himself*
On se flatta,	*one flattered one's self, himself*
Nous nous flattâmes,	*we flattered ourselves*
Vous vous flattâtes,	*you flattered yourselves*
Ils se flattèrent,	*they flattered themselves*

PAST INDEFINITE.

Je me suis flatté, *m.* flattée, *f.*	*I have flattered myself*
Tu t'es flatté *or* flattée,	*thou hast flattered thyself*
Il s'est flatté,	*he has flattered himself*
Elle s'est flattée,	*she has flattered herself*
On s'est flatté,	*one has flattered himself* or *one's self*
Nous nous sommes flattés *or* flattées,	*we have flattered ourselves*
Vous vous êtes flattés *or* flattées,	*you have flattered yourselves*
Ils se sont flattés, *m.*	*they have flattered themselves*
Elles se sont flattées, *f.*	*they have flattered themselves*

PAST ANTERIOR.

Je me fus flatté, *m.* flattée, *f.*	*I had flattered myself*
Tu te fus flatté *or* flattée,	*thou hadst flattered thyself*
Il se fut flatté,	*he had flattered himself*
Elle se fut flattée,	*she had flattered herself*
On se fut flatté,	*one had flattered himself, one's self*
Nous nous fûmes flattés *or* flattées,	*we had flattered ourselves*
Vous vous fûtes flattés *or* flattées,	*you had flattered yourselves*
Ils se furent flattés, *m.*	*they had flattered themselves*
Elles se furent flattées, *f.*	*they had flattered themselves*

PLUPERFECT.

Je m'étais flatté, *m.* flattée, *f.*	*I had flattered myself*
Tu t'étais flatté *or* flattée,	*thou hadst flattered thyself*
Il s'était flatté,	*he had flattered himself*
Elle s'était flattée,	*she had flattered herself*
On s'était flatté,	*one had flattered himself, one's self*
Nous nous étions flattés *or* flattées,	*we had flattered ourselves*
Vous vous étiez flattés *or* flattées,	*you had flattered yourselves*
Ils s'étaient flattés, *m.*	*they had flattered themselves*
Elles s'étaient flattées, *f.*	*they had flattered themselves*

FUTURE.

Je me flatterai,	*I shall* or *will flatter myself*
Tu te flatteras,	*thou shalt* or *will flatter thyself*
Il se flattera,	*he shall* or *will flatter himself*
On se flattera,	*one will flatter himself, one's self*
Nous nous flatterons,	*we will flatter ourselves*
Vous vous flatterez,	*you will flatter yourselves*
Ils se flatteront,	*they will flatter themselves*

FUTURE ANTERIOR.

Je me serai flatté, *m.* flattée, *f.*	*I shall have flattered myself*
Tu te seras flatté *or* flattée,	*thou wilt have flattered thyself*
Il se sera flatté,	*he will have flattered himself*
Elle se sera flattée,	*she will have flattered herself*
On se sera flatté,	*one will have flattered himself*
Nous nous serons flattés *or* flattées,	*we will have flattered ourselves*

Vous vous serez, flattés *or* flattées,	*you will have flattered yourselves*
Ils se seront flattés, *m.*	*they will have flattered themselves*
Elles se seront flattées, *f.*	*they will have flattered themselves*

Conditional Mode.

PRESENT.

Je me flatterais,	*I should, would, could, might flatter myself*
Tu te flatterais,	*thou wouldst flatter thyself*
Il se flatterait,	*he would flatter himself*
On se flatterait,	*one would flatter himself, one's self*
Nous nous flatterions,	*we would flatter ourselves*
Vous vous flatteriez,	*you would flatter yourselves*
Ils se flatteraient,	*they would flatter themselves*

PAST.

Je me serais flatté, *m.* flattée, *f.*	*I should, would, could, might have flattered myself*
Tu te serais flatté *or* flattée,	*thou wouldst have flattered thyself*
Il se serait flatté,	*he would have flattered himself*
Elle se serait flattée,	*she would have flattered herself*
On se serait flatté,	*one would have flattered one's self*
Nous nous serions flattés *or* flattées,	*we might have flattered ourselves*
Vous vous seriez flattés *or* flattées,	*you would have flattered yourselves*
Ils se seraient flattés, *m.*	*they would have flattered themselves*
Elles se seraient flattées, *f.*	*they would have flattered themselves*

Imperative Mode.

Flatte-toi,	*flatter thyself*
Qu'il se flatte,	*let him flatter himself*
Qu'on se flatte,	*let one flatter one's self, himself*
Flattons-nous,	*let us flatter ourselves*
Flattez-vous,	*flatter yourselves*
Qu'ils se flattent,	*let them flatter themselves*

Subjunctive Mode.

PRESENT.

Que je me flatte,	*that I may flatter myself*
Que tu te flattes,	*that thou mayest flatter thyself*
Qu'il se flatte,	*that he may flatter himself*
Qu'on se flatte,	*that one may flatter himself*
Que nous nous flattions,	*that we may flatter ourselves*
Que vous vous flattiez,	*that you may flatter yourselves*
Qu'ils se flattent,	*that they may flatter themselves*

IMPERFECT.

Que je me flattasse,	*that I might flatter myself*
Que tu te flattasses,	*that thou mightest flatter thyself*
Qu'il se flattât,	*that he might flatter himself*
Qu'on se flattât,	*that one might flatter himself*
Que nous nous flattassions,	*that we might flatter ourselves*
Que vous vous flattassiez,	*that you might flatter yourselves*
Qu'ils se flattassent,	*that they might flatter themselves*

PAST.

Que je me sois flatté, *m.* flattée, *f.*	*that I may have flattered myself*
Que tu te sois flatté *or* flattée,	*that thou mayest have flattered thyself*
Qu'il se soit flatté,	*that he may have flattered himself*
Qu'elle se soit flattée,	*that she may have flattered herself*
Qu'on se soit flatté,	*that one may have flattered himself*
Que nous nous soyons flattés *or* flattées,	*that we may have flattered ourselves*
Que vous vous soyez flattés *or* flattées,	*that you may have flattered yourselves*
Qu'ils se soient flattés, *m.*	*that they may have flattered themselves*
Qu'elles se soient flattées, *f.*	*that they may have flattered themselves*

PLUPERFECT

Que je me fusse flatté, *m.* flattée, *f.*	*that I might have flattered myself*
Que tu te fusses flatté *or* flattée,	*that thou mightest have flattered thyself*
Qu'il se fût flatté,	*that he might have flattered himself*
Qu'elle se fût flattée,	*that she might have flattered herself*
Qu'on se fût flatté,	*that one might have flattered himself*
Que nous nous fussions flattés *or* flattées,	*that we might have flattered ourselves*
Que vous vous fussiez flattés *or* flattées,	*that you might have flattered yourselves*
Qu'ils se fussent flattés, *m.*	*that they might have flattered themselves*
Qu'elles se fussent flattées, *f.*	*that they might have flattered themselves*

Infinitive Mode.

PRESENT.	PAST.
Se flatter, *to flatter one's self*	S'être flatté, *to have flattered one's self*

Participle.

PRESENT.	COMPOUND.
Se flattant, *flattering one's self*	S'étant flatté, *having flattered one's self*

PAST.

Flatté, *m.* flattée, *f.* flattés, *m. p.* flattées, *f. p.* *flattered*

§ 57.—Negative Form of the Reflective Verb.

NE PAS SE FLATTER, *NOT TO FLATTER ONE'S SELF.*

Indicative Mode.

PRESENT.

Je ne me flatte pas,	*I do not flatter myself*
Tu ne te flattes pas,	*thou dost not flatter thyself*
Il ne se flatte pas,	*he does not flatter himself*
On ne se flatte pas,	*one does not flatter himself*
Nous ne nous flattons pas,	*we do not flatter ourselves*
Vous ne vous flattez pas,	*you do not flatter yourselves*
Ils ne se flattent pas,	*they do not flatter themselves*
&c. &c.	&c. &c.

We will add a compound tense and the imperative conjugated in this form.

PAST INDEFINITE.

Je ne me suis pas flatté, *m.* flattée, *f.*	*I have not flattered myself*
Tu ne t'es pas flatté *or* flattée,	*thou hast not flattered thyself*
Il ne s'est pas flatté,	*he has not flattered himself*
Elle ne s'est pas flattée,	*she has not flattered herself*
On ne s'est pas flatté,	*one has not flattered himself*
Nous ne nous sommes pas flattés, *or* flattées,	*we have not flattered ourselves*
Vous ne vous êtes pas flattés *or* flattées,	*you have not flattered yourselves*
Ils ne se sont pas flattés, *m.*	*they have not flattered themselves*
Elles ne se sont pas flattées, *f.*	*they have not flattered themselves*
&c. &c.	&c. &c.

Imperative Mode.

Ne te flatte pas,	*do not flatter thyself*
Qu'il ne se flatte pas,	*let him not flatter himself*
Qu'on ne se flatte pas,	*let one not flatter himself*
Ne nous flattons pas,	*let us not flatter ourselves*
Ne vous flattez pas,	*do not flatter yourselves*
Qu'ils ne se flattent pas,	*let them not flatter themselves*
&c. &c.	&c. &c.

§ 58.—Interrogative Form of the Reflective Verb.

Indicative Mode.

PRESENT.

Me flatté-je ? *or** est-ce-que je me flatte ?	*do I flatter myself ?*
Te flattes-tu ?	*dost thou flatter thyself ?*
Se flatte-t-il ?†	*does he flatter himself ?*
Se flatte-t-on ?	*does one flatter himself ?*
Nous flattons-nous ?	*do we flatter ourselves ?*
Vous flattez-vous ?	*do you flatter yourselves ?*
Se flattent-ils ?	*do they flatter themselves ?*
&c. &c.	&c. &c.

PAST INDEFINITE.

Me suis-je flatté, *m.* flattée ? *f.*	*have I flattered myself ?*
T'es-tu flatté *or* flattée ?	*hast thou flattered thyself ?*
S'est-il flatté ?	*has he flattered himself ?*
S'est-elle flattée ?	*has she flattered herself ?*
S'est-on flatté ?	*has one flattered himself ?*
Nous sommes-nous flattés *or* flattées ?	*have we flattered ourselves ?*
Vous êtes-vous flattés *or* flattées ?	*have you flattered yourselves ?*
Se sont-ils flattés ? *m.*	*have they flattered themselves ?*
Se sont-elles flattées ? *f.*	*have they flattered themselves ?*
&c. &c.	&c. &c.

* See § 98, and L. 25. † See L. 4. R. 6.

§ 59.—The Reflective Verb Conjugated Negatively and Interrogatively.

Indicative Mode.

PRESENT.

Ne me flatté-je pas? Est-ce que je ne me flatte pas?	*do I not flatter myself?*
Ne te flattes-tu pas?	*dost thou not flatter thyself?*
Ne se flatte-t-il pas?	*does he not flatter himself?*
Ne se flatte-t-on pas?	*does one not flatter himself?*
Ne nous flattons-nous pas?	*do we not flatter ourselves?*
Ne vous flattez-vous pas?	*do you not flatter yourselves?*
Ne se flattent-ils pas?	*do they not flatter themselves?*
&c. &c.	&c. &c.

PAST INDEFINITE.

Ne me suis-je pas flatté, *m.* flattée? *f.*	*have I not flattered myself?*
Ne t'es-tu pas flatté *or* flattée?	*hast thou not flattered thyself?*
Ne s'est-il pas flatté?	*has he not flattered himself?*
Ne s'est-elle pas flattée?	*has she not flattered herself?*
Ne s'est-on pas flatté?	*has one not flattered himself?*
Ne nous sommes-nous pas flattés *or* flattées?	*have we not flattered ourselves?*
Ne vous êtes-vous pas flattés *or* flattées?	*have you not flattered yourselves?*
Ne se sont-ils pas flattés? *m.*	*have they not flattered themselves?*
Ne se sont-elles pas flattées? *f.*	*have they not flattered themselves?*

LESSONS IN LATIN.—No. LII.

By John R. Beard, D.D.

VERBS WHICH GOVERN THE ACCUSATIVE.

The simplest form of the accusative case, as governed by verbs, is that which is found in connexion with transitive verbs of the active voice, in which the action indicated by the verb passes directly from the subject to the object, e. g.,

Deus *creavit mundum.*
God created the world.

Practice, aided by rule, will teach the student what verbs in Latin take an accusative case, but he has need to be on his guard against mere English analogy. *To fly from* in English would not give him the idea that the corresponding Latin verb required its object in the accusative case; yet so it does, e. g.,

Andromeda *aufugiens aspectum* moesta parentis.
Sad Andromeda flying from the sight of her father.

The accusative is sometimes not expressed but understood, e. g.,

Non sine summo labore scribo.
Not without the greatest labour (difficulty) do I write.

Intransitive verbs become in some sort transitive by taking a noun of the same meaning as the action which they signify, as ludere ludum, *to play a play.*

The noun may be similar in meaning instead of the same; thus aleam ludere *to play* (at) *dice.* Hence arise some forms which require special attention, e. g.,

Bacchanalia vivere.
To live in a bacchanalian manner.

Nunc Satyrum nunc agrestum Cyclopum movetur.
He dances now the Satyr dance, now the Cyclopian.

Olympia vincere.
To conquer at the Olympic games.

Coronari Olympia.
To gain a chaplet at the Olympic games.

Vincere judicium.
To succeed in a law suit.

Intransitive verbs may have an accusative of the neuter pronoun, as hoc laetor, *I am glad of that.*

Verbs in themselves intransitive acquire a transitive acceptation by receiving a preposition into combination; thus latrare, *to bark*, is intransitive, but adlatrare, *to bark at*, is transitive. And here you may observe a marked difference between the Latin and the Saxon-English; in Latin the preposition enters into the substance of the verb, and takes its place at the beginning; in English the preposition is loosely appended to the end of the verb, and is connected in construction not so much with the verb as with the noun it governs. Intransitive verbs in general cannot be used in the passive voice; but those intransitive verbs which are made transitive by prepositions may be used in the passive voice; as fossa transilitur, *the ditch is leaped over.*

The preposition found in the verb is sometimes repeated with the noun for the sake of emphasis, as *ad* urbem advolavit, *he flew to the city.*

Occasionally there is a difference of meaning between the verb with and the verb without the second preposition; thus adire ad regem is *to go to the king*, but adire regem is *to address, to entreat the king.*

Two accusatives are found with transitive verbs. The first instance is where one of the accusatives is an adjective, e. g.,

Euphrates efficit *Mesopotamiam fertilem.*
The Euphrates renders Mesopotamia fertile.

The verb efficit governs Mesopotamiam. It does more, its force extends to fertilem. Fertilem here is not a mere epithet, as you may learn by so rendering it in the passive voice,—the fertile Mesopotamia is produced by the Euphrates. This is not the sense; what is meant is, that the Euphrates causes Mesopotamia to be fertile; and as in this English sentence the verb *causes* has two objects, namely *Mesopotamia* and *to be*, so the Latin sentence has two objects, namely, *Mesopotamiam* and *fertilem.* The phrase and the construction are different from what appears in laudo discipulum diligentem, where *diligentem* is an epithet simply qualifying *discipulum.* If, however, we write efficio discipulum diligentem, *diligentem* becomes a second accusative.

This second accusative is indeed the predicate to the object of the verb. That predicate may, as we have just seen, be an adjective; it may also be a noun The predicate of the double accusative may be a noun after verbs of naming or calling, such as appello, dico, nomino, saluto. As in the active voice two accusatives go with these verbs, so in the passive have they two nominatives, e. g.,

Act. *Summum consilium* majores nostri appellarunt *senatum.*
Our ancestors called the highest council, senate.

Pass. *Summum consilium* a majoribus nostris appellatus est *senatus.*
The highest council was called senate by our ancestors.

In a similar way any two accusatives are taken by the verbs which signify to make, render, declare, appoint, account, such as facio, efficio, reddo, creo, declaro, designo, constituo, duco, puto. Another class of verbs having the same construction are such as signify to give, ascribe, &c., as do, tribuo, adjungo, sumo, peto, habeo. If the student will look carefully into the verbs which have been so far described as taking two accusatives, he will find that they are verbs which in themselves do not fully express the intended idea. For instance, te nomino, *I name thee*, the question occurs what? What do you name, appoint, or make me? I name thee *Cicero*, te Ciceronem nomino. Accordingly, you see that the second accusative is supplementary to or explanatory of the first; is indeed an indispensable part of the idea; as such it must of course be in the same case as the noun which it qualifies. These two accusatives may then be called the principal and the accessory, e. g.,

PRINCIPAL ACC.	ACCESSORY ACC.
Athenienses Miltiadem	imperatorem sumpserunt.

The Athenians took Miltiades as (or for) their commander.

By the rendering of this sentence the student will learn that in English the particle *as* or the preposition *for* must be inserted in order to make sense. This construction, however, must not be confounded with another, e. g.,

Romulus trecentos armatos *ad custodiam* corporis habuit.
Romulus had three hundred armed men as a body guard.

The last construction points out more emphatically the object or purpose.

Different again is the phrase pro amico aliquem habere, which means to treat a person as a friend, whereas aliquem amicum habere is to have a friend in some one. The pro, however, may signify simply *instead of*, no less than *as*, and is sometimes omitted in the English translation.

Verbs which signify to teach, to learn, to ask, as doceo, disco, rogo, take two accusatives, one of the person, the other of the thing. In the passive voice these verbs have one accusative, e. g.,

Active. docco *te artem, I teach thee an art.*
Passive. ars *te* docetur, *an art is taught thee.*
Passive. tu doceris *artem, thou art taught an art.*

Celo, *I conceal, hide from,* has the same construction.

The accusative is used after verbs of motion to denote the place whither a person proceeds. The construction may be without a preposition, or with a preposition; first, without a preposition when the place or object is the name of a city or a small island, or when the noun is domus or rus; thus, eo Athenas, *I go to Athens;* eo domum, *I go home;* eo rus, *I go into the country;* eo Delum, *I go to* (the island) *Delos.* In all other cases a preposition is required to denote the place whither you go; such as ad, in, versus, adversus, contra, ob, sub, subter, circum and circa, extra, intra, ultra, trans.*

A double accusative is found also with verbs compounded with the prepositions trans and circum:

Copias flumen transduxit Caesar.
Caesar led his forces over the river.

Pompeius *eos* omnia sua *praesidia* circumduxit.
Pompey led all his forces round them.

From the use of an accusative to signify direction towards an object comes the use of an accusative to signify breadth, or the distance through which you pass in making your way to an object. This is called the accusative of breadth; it answers to the question how far? and may be equally used of length or distance, e. g.,

Milites aggerem latum *pedes trecentos* exstruxerunt.
The soldiers raised a mound three hundred feet broad.

As length of place, so length of time is expressed by the accusative, e. g.,

Alexander Magnus *tredecim annos* regnavit.
Alexander the Great reigned thirteen years.

Hence is explained the accusative with natus, e. g.,

Dionysius quinque et viginti *natus annos* dominatum occupavit.
Dionysius seized supreme power when five and twenty years old.

Somewhat similar is the construction of the so-called accusative of the part. as,

Miles *fractus membra* labore.
A soldier broken as to (*in*) *his members by labour.*

The accusative case is also used in exclamations and direct addresses, e. g.,

Me caecum, qui haec ante non viderim!
Blind that I am not to have seen these things before.

The accusative is produced by the effect of words now no longer in use. This is therefore a case of ellipsis. Me miserum! may originally have been me miserum dico! If analysed, the phrase in full is quam ego sum miser! *how wretched I am.*

The vocative also is employed in exclamation, e. g.,

O miser, quod non sentis, quam miser *sis!*
O wretched man, in that thou knowest not how wretched thou art!

The nominative too may be employed when it suffices to mention an object in order to refer to it, e. g.,

O fortunata *mors,* quae pro patriâ *est* reddita.
O fortunate death which is undergone for one's native land.

After en and ecce (=ence) the nominative generally stands, e. g.,

Ecce tuae *litterae!*
En *dextra* fidesque!

More seldom the accusative occurs with en and ecce; en quattuor aras! ecce duas tibi, Daphne! ecce me! eccillum! eccum! eccos! are common in the comic poets.

The dative may accompany an exclamation, when the object is a personal one to whose advantage or disadvantage any thing happens, e. g.,

Vae *tibi!* hei misero *mihi!*
Woe to thee! alas, wretched me

VOCABULARY.

Aequo, 1. *I equal, keep pace with;* trux, cis, *fierce;* rufus, a, um, *red, tawny;* consimilis, e, *similar, like;* jusjurandum, i, n. *an oath;* somnio, 1, *I dream;* hereditas, ātis, f. *an inheritance;* fratricida, ae, c. *a brother-slayer;* recordatio, onis, f. *recollection;* perceptus, a, um, (percipio) *perceived, enjoyed;* nihilum, i, n. *nothing;* triduum, i, n. *a journey of three days;* imperator, ōris, m. *a commander, an emperor.*

EXERCISES.—LATIN-ENGLISH.

Operam tuam multam! Eheu me miserum! O fallacem hominum spem, fragilemque fortunam, et inanes nostras contentiones! pro deorum hominumque fidem! quae res unquam, pro sancte Jupiter, non modo in hâc urbe, sed in omnibus terris est gesta major? O frustra suscepti mei labores! O spes fallaces! O cogitationes inanes meae! en causam cur lex ferretur; hem tibi talentum argenti! scribo epistolam; verbero canem; filius patrem amat; Romani Carthaginienses vicerunt; Scipio delevit Carthaginem; equitem velocissimi pedites cursu aequare poterant; candida pax homines, trux decet ira feras; rufus crinis apud Germanos virum non dedecet; prudentia nunquam deficiat* oratorem; Themistocles non effugit civium suorum invidiam; Ulysses militiam subterfugere voluit; fortes fortuna juvat; me Agamemnonem aemulari putas; gloria virtutem tanquam umbra sequitur; fortes et sapientes viri non tam praemia sequi solent recte factorum, quum ipsa recta facta; Marius in eâ parte curabat; consimilem luserat jam olim ille ludum; mirum somniavi somnium; ego vestros patres vivere arbitror, et eam quidem vitam, quae est sola vita nominanda; juravi verissimum pulcherrimumque jusjurandum; Siccius Dentatus triumphavit triumphos novam; non possum idem gloriari; illud non dubito; illud tibi assentior; Pythagoras Persarum magos adiit; consules consulatum ineunt; Pythagoras multas regiones barbarorum pedibus obiit; neminem conveni; omnia nos undique fata circumstant; mox Carthaginem circumsidebant Romanae legiones; Scipio colloquium haud abnuit; historia non debet egredi veritatem; optima consilia ineuntur; hoc oppidum obsidetur; hereditas aditur maxima; per epistolam aut per nuntium quasi regem adiri eum aiunt; Caesar colonias patrias adiit; eas quoque nationes adire et cognoscere volebat; magna spe ingredior in reliquam orationem; mater filium fratricidam compellavit; iram bene Ennius initium dixit insaniae; nutricem plebis Romanae Siciliam nominavit; voluptatum perceptarum recordatio vitam beatam efficit; homines caecos reddit cupiditas et avaritia; Poeni Hamilcarem imperatorem fecerunt; Ancum Martium regem populus creavit; Socratem Apollo sapientissimum judicavit; Socrates totius mundi se incolam et civem arbitrabatur; Ariovistus Caesari respondit sese illum non pro amico sed pro hoste habiturum esse; quid stultius quam incerta pro certis habere, falsa pro veris? unus Cato mihi est pro centum millibus; Artaxerxes Iphicratem ab Atheniensibus petivit ducem; an pro nihilo id putas? Achaei Philippum auxilia orabant; verres parentes pretium pro sepulturâ liberorum poscebat; quotidie Caesar Aeduos frumentum flagitabat; quis musicam docuit Epaminondam? non te celavi sermonem; scito me non esse rogatum sententiam; Marcius omnes militiae artes edoctus fuerat; an sum etiam nunc vel Graece loqui vel Latine docendus? illud me praeclare admones; discipulos id unum moneo; Apollo poscitur verba; via tibi est roganda; Epaminondas docetur musicam; Cato rogatus est sententiam; legiones per Italiam, Rhegium atque Siciliam, porra ex Sicilia in Africam transvectae sunt; Miltiades pervenit Chersonesum; domos omnes concursant; Mithridates ad Cneium Pompeium legatos usque in Hispaniam misit; milites Caesaris sub montem succedunt; Hellespontum copias trajecit; exercitum Rhenum transportare jussit; flumen transmittitur ponte; ab horâ octavâ usque ad vesperam collocuti sumus; dormiet in lucem; septingenta milia passuum ambulavit; Ariovistus tridui viam a suis finibus processit; campus Marathon abest ab oppido Atheniensium circiter milia passuum decem; turres pedes octoginta inter se distabant; Arabes gladios habent tenues, longos quaterna cubita; milites aggerem latum pedes trecentos triginta, altum pedes octoginta exstruxerunt; Atticus annos triginta medicinâ non indiguit; Appius caecus multos annos fuit; Saguntum tertium jam annum sub hostium potestate est; multa saecula viguit Pythagoreorum nomen; Nestor tertiam jam aetatem hominum vivebat; equidem quartum annum ago et octogesimum; tota mihi dormitur hiems; omnia Mercurio similis, vocemque coloremque.

ENGLISH-LATIN.

They beat a dog; the son loves his father; thou writest a letter; the English will conquer the enemy; the enemy has been conquered by the English; Carthage was destroyed by Scipio; peace becomes the brave; the English have made Wellington a duke; the French have named Napoleon emperor; I am twenty years

* Compare what is said on the subject under the head of verbs governing the ablative.

* The subjunctive mood for the infinitive—*let forethought never fail* (be wanting in) *the orator.* The subjunctive present is used instead of the imperative when it is wished to put the command in a gentle manner. The perfect subjunctive is sometimes used with a yet more mild and considerate one, e. g., ne feceris, *I wish you would not do it.*

old; I am in (age) my thirtieth year; my brother has been blind many months; the ditch is ten feet broad; he led his army over the river; Joseph dreamed a dream; they play at dice; dost thou doubt that? they grant me that; I am going to the king; good men never depart from truth; avarice makes men blind; Socrates was accounted wise; the consul was asked his opinion; they teach girls music; the boys must be taught Latin; O wretched me! woe to thee, husband!

LESSONS IN MUSIC.—No. XVIII.

By JOHN CURWEN.

THE subject of "transition" or "modulation," on which we have now to speak, will be deeply interesting to those who have studied the "mental effects" of notes as developed in the preceding lessons. We shall first *describe* this musical change, and then show our pupils how to *test* our description by their own ears. If we had them under oral instruction, we should first make their ears conscious of the change, and then persuade them to analyse it, trace its origin, and describe it. As we cannot compel our pupils to pass through this discipline, we trust that they will be their own masters in this respect, and remember that music is not to be learnt by the eye, but by the ear. If you do nothing but *read* a verbal *description* of a musical fact, you can only be said, then, to have learnt the *description*; the musical fact itself you can know nothing of until you have *heard* it.

Sometimes, in the course of a tune, the notes are so ordered as to direct the ear to a new GOVERNING or KEY-NOTE,—diverting the mind for a time from considering the original key-note as the principal key-note or the principal note of rest and close. The music is then said to have passed into a new key, and the several notes exchange the mental effects which they possessed as members of the old key for those which are proper to their position in the new key. This is called TRANSITION, and is usually effected by an alteration in one or more of the notes.

"Modulation" is another name commonly given to this magical change of musical intention and effect,—which, at the call of some single new note characteristically heard as it enters the music, causes all the other sounds to acknowledge a new ruler and sovereign, and, suddenly assuming the new offices he requires, to minister in their places around him. Modulation means, more properly, simply singing in "mode" or key, which of course includes the singing which passes into various "modes" or keys, but is also applicable to correct performance in one mode. See Mr. Graham's article "Music," in the Encyclopædia Britannica.

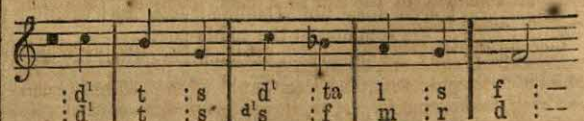
The note most frequently chosen to become a new governing (or key) note is SOH, the fifth of the common scale. The ear is usually *made to feel* that SOH (the fifth) is treated as the key-note, by the introduction of *a new* note instead of the FAH of the original key. This new note occupies the same position in respect to SOH which TE holds to DOH,—and SOH having become the new DOH, it would be properly called TE. When, however, it is desirable to indicate the new note alone, and to distinguish it from the DOH of the original key, it is named FE.

In the following diagram, we have endeavoured to illustrate the consequences of this change in the new effects produced on the mind. The central column represents the principal key of the tune in which you are singing, with those adjectives by which we have, in previous lessons, designated the mental effects of the notes of the scale placed on either side of each note. These descriptive words, however, must be taken with all the limitations arising from rate of movement, harmonic accompaniment, &c., to which we before referred. With this understanding, the right-hand column will show how the notes change their mental effect at the call of the new note, now called FE, and direct the ears to what before was SOH, as a new key-note—a new DOH. The "steady, calm" note begins to produce the effect which we describe as "weeping and sorrowful." The "hopeful, rousing" note changes to the "grand and clear" effect, and so on. Let the pupil sing the tune "Melcombe" to the figures "one, two, three, four, five, six, seven, eight,—one, two, &c.," or get it sung to him. Let him notice the effect of the second "eight" as compared with the first. Do you not feel that it has become, in mental effect, no longer SOH but DOH? Notice again the effect on your mind of the first two notes in the third line, immediately after the FE has been heard. Is not ME softened and more sad? Is it not the "steady, calm" note, partaking of the "weeping, sorrowful" character? After the next paragraph we shall be able to pursue the tune a step farther.

THE MENTAL EFFECTS OF TRANSITION PROXIMATELY DESCRIBED.

grand	**SOH**	*clear*	STRONG	**DOH**	FIRM	*desolate*	FAH	*awe-inspiring*
desolate	FAH	*awe inspiring*	SENSITIVE	TE	PIERCING	*steady*	**ME**	*calm*
steady	**ME**	*calm*	WEEPING	LAH	SORROWFUL	*hopeful*	RAY	*rousing*
hopeful	RAY	*rousing*	GRAND	**SOH**	CLEAR	*strong*	**DOH**	*firm*
strong	**DOH**	*firm*	DESOLATE	FAH	AWE-INSPIRING	*sensitive*	TE	*piercing*
sensitive	TE	*piercing*	STEADY	**ME**	CALM	*weeping*	LAH	*sorrowful*
weeping	LAH	*sorrowful*	HOPEFUL	RAY	ROUSING	*grand*	**SOH**	*clear*
grand	**SOH**	*clear*	STRONG	**DOH**	FIRM	*desolate*	FAH	*awe-inspiring*

The note FAH—the fourth in the common scale—is also very frequently taken, by transition, as a key-note. The whole "intention" of the music is diverted to FAH as its new centre, and the tune is said to have passed into the FAH key. This transition is indicated to the ear by the introduction of a new note instead of the TE of the original key. This new note stands in the same relation to LAH (the sixth) which FAH holds to ME. It is the FAH of the new key, but is called TA when it is wished to distinguished it from the FAH of the previous key. This FAH key is represented by the left hand column of the diagram above. Let the pupil put these remarks to the test in connexion with the tunes "Oberlin" and "Saul;" or by studying the following phrase.



The second method of solfaing need not at present be noticed. Only ask yourselves, in connexion with the first method of solfaing, "do LAH really sound like the *weeping*, and FAH like the *desolate* notes they were?" The note SOH is called in books of musical science the dominant, and the new key first described is called "the key of the dominant." FAH being

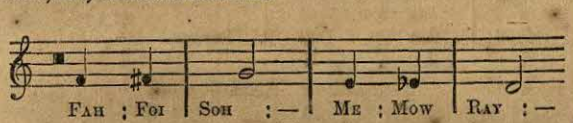
called the "subdominant," the second of the new keys described is called "the key of the subdominant." It may also be noticed that FE—the *distinguishing* note of the dominant key—is often called "the sharp fourth," as though it were only the fourth of the original key made "sharper" or higher. So indeed it appears in the old notation, but it is not truly the fourth of any key, but the *seventh* of a new key. So also TA—the *distinguishing* note of the subdominant key—is often called "the flat seventh," as though it were merely the seventh of the original key made "flat" or lower, whereas it is, in truth, the *fourth* of a new key.

The pupil will have noticed, in the third line of the first example, that immediately the FAH of the original key is heard instead of FE, the music is felt to have returned to the original key, and the SOH is instantly restored to its more brilliant character. Thus the "return" from the SOH key is made by a transition, which has the same effect as passing into the FAH key,—and you will also notice that a "return" from the FAH key has also the same effect as transition into a SOH key.

In simple music, the tune is seldom carried, by transition, more than one remove from the original key, and soon returns to it. In lengthened pieces of music, however, the tune sometimes passes from key to key, in this manner, till it is several removes from the original key, and then returns, through the same keys, till it reaches the original key again. And sometimes, though rarely, it passes *immediately* into a distant key.

It will be observed that the notes FE and TA produce on the mind the effects proper, respectively, to the TE and FAH of the original key,—but somewhat softened. "It is clear," says M. Jeu de Berneval, "that the whole artifice of these two modulations depends on the properties of the *subdominant* (FAH) and *sensible* (TE) which exchange their respective offices." In other words, these transitions present TE to the ear where it was expecting FAH,—and FAH where it expected TE.

Occasionally, in the course of a tune, a note is introduced which is somewhat less than half a tone higher or lower than some given note of the scale. It is called a chromatic (the Greek for *colouring*) note, and the interval between it and the note of the scale from which it springs is called a chromatic degree. When a note is thus *raised* a chromatic degree we distinguish it by the vowel *e*. Thus FAH becomes FE, and RAY becomes RE. When a note is *lowered* a chromatic degree, the vowel *aw* is given to the syllable. Thus TE becomes TAW, ME, MAW, &c., written TA and MA.



Such notes give a *colouring* to the music, as the name indicates, but do not produce on the mind the effect of transition; for, instead of supplying the "desolate note" where we expected the "piercing note" (or *vice versa*) as in transition, they give to the ear a new note where it expected *nothing*. Chromatic FE, though it is the same sound with transition FE, produces a very different effect on the mind; for, being immediately preceded by FAH, the note which *distinguishes* the original key from that of its dominant (SOH), the mind refuses to be led by it from the original key. FE, however, is put *instead* of FAH, and the effect is different. Frequently these accidentals, even when they do not seem to rise or fall chromatically from the preceding tone, fail to change the key. See page 116, 2nd col., and "Attunement of the Ear to a Key," complete "Standard Course," page 145.

The chromatic semitone (*half-tone*), as it is sometimes incorrectly called, is described as that part of a tone *which is left* when a "diatonic semitone" (a tonule of the ordinary scale) has been taken from it. If so, it must sometimes contain *three* degrees of the scale of fifty-three, and sometimes *four*, as it is taken from the greater or the smaller tone.

It is often asked—do the "sharp" and the "flat" in the old notation represent more or less than half a tone? It is strange that authorities should differ. It is obvious enough, from our article on the scale, that the "diatonic semitone" is *more* than half a tone. The "sharp" in the old notation always has a "*diatonic*" or larger semitone *above* it (for example F sharp, in the key of G, which has between itself and G the "diatonic semitone" TE DOH). Therefore the "sharp" raises the note before which it is placed *less* than half a tone. In the same way it will appear that the "flat" in the old notation always has a "*diatonic*" or larger semitone *below* it (as B flat in the key of F, with the interval FAH ME below it), and therefore flattens the note before which it is placed *less* than half a tone. These intervals are the *chromatic* semitones.

It is usual, in elementary works, to treat this chromatic interval as the foundation of a *scale*, called "the chromatic scale," in which each tone of the common scale is divided into a chromatic degree and a "tonule" (or "diatonic semitone"). In one form of this "scale" (that with "sharps" in the old notation) the chromatic note leaves the larger interval above it, and in the other below; but the real musical *fact* is—that these chromatic notes are only *occasional variations* from the common arrangement of notes. Why then puzzle us with a *whole scale* of them? "*No piece of music*," says Dr. Bryce, "*is ever composed in the chromatic scale.*" Then how could Dr. Bryce, as a philosopher, elevate these exceptions to the dignity of a rule? Why should they be called a scale at all?

It may be well to mention here another minute interval spoken of in musical works. It is described as that which is left of a tone when a chromatic degree has been taken from each end,—or that which is left of a "tonule" (diatonic semitone) when a chromatic degree has been taken from it. So that it must be equal to about one degree of the "scale of fifty-three" described in our early lessons. It is called the "diesis," and sometimes most unreasonably the "enharmonic *semi*-tone." This too is made by our theorists into a *scale!*

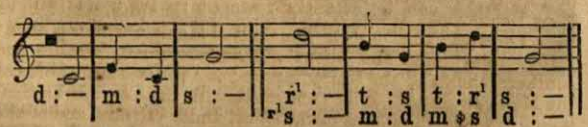
The piano, as at present constructed and tuned, does not exhibit any difference between these three smaller degrees,—the "tonule" (diatonic semitone), the chromatic degree, and the diesis. It makes a sort of compound between the two first-named, and insists on unnatural *half*-tones. The last, on the piano, is a mere *nominal* change,—a certain black key, on the finger-board, is *called* a flat instead of a sharp, or it is *called* a sharp instead of a flat. The student who wishes to know the *reality* or otherwise of this "diesis" may notice the difference which the *scale of nature* gives between LAH of the original key and RAY of the SOH key, by drawing the two keys side by side in the "scale of fifty-three." Now an ordinary ear might not be able to mark the distinction between the two notes, or to tell if the voice had been singing LAH *when* it passed into RAY of the dominant key;—but let harmony be brought in to help the judgment, let the TE or SOH of its own key be sounded along with the RAY, and even the common ear will require its sharpened position. In the same way,—if the *eye* were presented *successively* with two lines very slightly different, but each of which assumed to be perpendicular, it might be difficult to see any difference between them,—but if a horizontal line were placed beneath, with which to compare them, *then* an eye but little cultivated would be able to choose the more upright. A singer with good intonation will make these distinctions by instinct, though he is unconscious of any change in his vocal organs,—and a good violinist (if not accompanying a keyed instrument) will satisfy his ear in a similar manner, though he may not be able to show that he puts his finger on a different place, or even know that he gives it a pressure to the one side or the other. These distinctions may be seen carefully marked in the large sheet "Modulator" published by Ward and Co.

In transition, the music usually passes into the new key through some note, which, as far as relates to its pitch, is common to both keys? Thus you will see, from the diagram above, that we can pass into the key of SOH (the dominant) through the note ME which is convertible into LAH of the new key, or through SOH (convertible into DOH), as well as through other notes which have a corresponding pitch in both keys. But if we were to pass directly from FAH, which cannot form part of the new key, to FE (which "distinguishes" it), the note FE would then seem to spring as a chromatic note from FAH, and would not necessarily suggest the formation of a new key. For the same reason, we could not well produce the effect of transition by passing into the key of FAH (the "subdominant") from TE to TA. Nevertheless, in modern music, many cases occur of a more "*sudden*" or "irregular" transition, in which

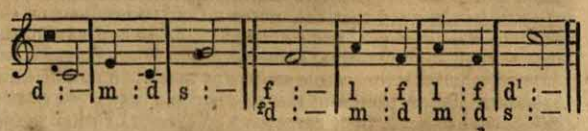
the music passes directly from FAH to FE or from TE to TA. See two cases in tunes well-known,—one in the "May Fly," and the other in "Lightly Tread." Both are solfaed in the "Tonic Solfa Reporter," No. 4, (Ward and Co.) "Natural modulation," says Dr. Goss, "that is, modulation into related keys, may be performed either *gradually* or *suddenly*. The gradual method is that in which we take some *doubtful chord* (or chord which may be considered to belong either to the key we are in or to that into which we are going), and from this chord proceed to a *modulating chord*, or chord which clearly marks the change of key, by exhibiting a new sharp or flat." Dr. Marx calls this preparatory chord the "mediating chord." See also Dr. Crotch and Mr. Hickson.

This "convertible" note, from which transition is taken, should be indicated, in solfaing, by pronouncing the syllabic name it bears in the old key together with that which it takes in the new. Thus ME converted into LAH of the new key would be pronounced M'LAH, DOH converted into SOH would be pronounced D'SOH, and so with the rest. The mention of the first syllabic name gives help to the ear (by association) *in striking* the note, and the sliding into the new syllable prepares the ear for the interval by which we *leave* the note, and makes us feel our place in the new key. In writing, this "convertible" note may have the initial of its first syllabic name placed before and above that of its second and new name. Thus $^{m}l_{1}$, or, ^{d}s or ^{r}r. When music is solfaed in this, the more perfect way of denoting transition, FE of course becomes the new TE, and TA is the new FAH. As the old notation, however, does not mark the "doubtful" or "convertible" note, and leaves us unprepared for the change until we come actually upon a distinguishing note of the new key, we are often obliged to translate that distinguishing note by the syllables FE or TA, and continue solfaing as though we were still in the old key. This however, is very unsatisfactory, except where the transition is only momentary, and there is an immediate return to the old key.

Transition may be indicated, without the occurrence of the "distinguishing" notes to which we have referred, by the marked use of those notes of the scale which are not the "bold and strong" notes, as *though they were meant* to be bold and strong. In the second part of the following phrase, for instance, the ear naturally supposes SOH, TE, and RAY to have become "bold and strong" notes—in other words, to have become changed into the DOH, ME, and SOH of a new key. The "modulator" will show you that that new key is the key of SOH—the dominant.



And in the phrase given below, you are compelled to feel that the peculiar use of LAH and FAH has made *them* "bold and strong" notes, or, in other words placed you in the key of FAH —the "subdominant."



EXERCISE 39. **MELCOMBE.** KEY F. M. 50.

:s	s :f	m :r	d :l	s :s	d^1 :t	
See	how be -	neath the	moon - beam's	smile, Yon	lit - tle	
THUS	MAN, the	sport of	bliss and	care, Ris -	es on	
:m	m :r	d :t_1	d :f	m :m	m :r	
l :s	s :fe	s :m	m :f	s :m		
bil - low	heaves its	breast, And	foams and	spar - kles		
Time's e -	vent - ful	sea : *And*	*hav - ing*	*swelled a*		
d :t_1	t_1 :l_1	t_1 :d	d :l_1	t_1 :d		
r :-m	f :f	m :r	s :f	m :r	d	
for a -	while, And	mur - m'ring	then sub-	sides to	rest.	
mo - ment	*there,* Thus	melts in -	to e -	ter - ni -	ty:	
t_1 :-d	r :r	d :t_1	d :l_1	d :t_1	d	

The rest of the exercises will be given in the next lesson.

LESSONS IN GEOGRAPHY.—No. XXIV.

MAP OF NORTH AMERICA.

NORTH and South America form but one vast irregularly shaped continent, being connected with each other by the Isthmus of Panama or Darien; it occupies a part of four zones, extending from the north frigid zone, across the north temperate and the torrid zones, and stretching into the south temperate zone. North America is bounded on the north, by the Arctic Ocean; on the south, by the Gulf of Mexico and the Pacific Ocean; on the east, by the Atlantic Ocean; and on the west, by the Pacific Ocean. This continent extends from Latitude 76° 45′ N. to Latitude 8° 1′ N., and from Longitude 52° 18′ W. to Longitude 168° W. The most northerly point of North America is considered to be Cape Clarence, in North Somerset (Arctic Regions), in Lat. 76° 45′ N. and Long. 77° 40′ W.; the most southerly, is Burica Point, Costa Rica, in Lat. 8° 1′ N. and Long. 82° 50′ W.; the most easterly point is Cape Charles, Labrador, in Lat. 52° 18′ and Long. 55° 31′ W.; and the most westerly point is Cape Prince of Wales, Russian America, in Lat. 65° 16′ N. and Long, 168° W. The latter point, situated in Behring's Strait, is said to approach the easternmost point of Asia, within a distance of 36 miles, a short enough sail for European migrators to accomplish even in an open boat, and, having done so, to people the new world. Within the limits above mentioned the greatest length of North America is 4,817 miles from north to south; and its greatest breadth, from east to west, is 3,614 miles. The surface of this continent, including that of the West Indies and other islands belonging to it, may be reckoned about 10 millions of square miles, and the population about 30 millions; thus giving on an average about 3 inhabitants to every square mile.

The great *inland seas* and *gulfs* of North America are the following:—Hudson's Bay, which runs through Hudson's Strait into the British territory, and is connected with the Arctic Seas by Fox Channel, Fury and Hecla Strait, Prince

Regent's Inlet, Barrow Strait, and Wellington Channel; it is also connected with Baffin's Bay by Lancaster Sound; Hudson's Bay terminates in James's Bay to the south. Baffin's Bay is connected with the Atlantic Ocean by Davis's Strait, Lancaster Sound, and other sounds and inlets on the north. The Gulf of St. Lawrence is the broad estuary of the river of the same name, having the large island of Newfoundland with other smaller ones at its embouchure (*river mouth*). The area of Hudson's Bay is reckoned at 350,000 square miles; its length from north to south being about 1,000 miles, and its breadth about 500 miles. Baffin's Bay is about 1,500 miles long, and about 300 miles broad; its surface is not less than that of Hudson's Bay, being at least 400,000 square miles. The Bay of Fundy runs from the Atlantic between Nova Scotia and New Brunswick. It is remarkable for its high tides, which have been known to rise 90 feet. The Gulf of Mexico, which is about 1,100 miles long, and about 500 miles broad, washes the southern shores of the United States, and the western shores of the Mexican States; it is connected with the Carribbean Sea, which washes the shores of the West India Islands, and of the northern part of South America; the latter sea is about 1,800 miles, and on an average about 1,000 miles broad. The Bay of Campeachy is the southern part of the Gulf of Mexico. The gulf stream rushes from the Gulf of Mexico through the strait of Florida, between Cuba and the peninsula of Florida, and crosses the Atlantic in an easterly direction, preserving its higher temperature in the middle of the ocean, and being sensible in this respect when it reaches the Azores. In the Caribbean Sea, to the south-east, are the Gulf or Bay of Honduras, the Mosquito Gulf, and the Gulfs of Darien and Venezuela. On the Pacific side of North America are the Gulfs of Panama, Tchuantepec, and California; and a variety of small bays and sounds stretching to Behring's Straits, and even beyond that strait into the Arctic Ocean. The most important *straits* have been already mentioned in the preceding remarks; besides these, there are: Frobisher Strait leading from Davis's Strait to Fox Channel; Sir Thomas Roe's Welcome, between Southampton Island and the main land; the Strait of Belle Isle between Newfoundland and Labrador; the Gut of Canso between Cape Breton Island and Nova Scotia; and others of less importance.

The following is a list of the countries, kingdoms, empires, and states of North America, similar to our former lists of the old continents. Many of the Latitudes, and Longitudes are only approximate, having been taken from maps; but they were taken from the latest published. In islands, where a town or capital is not given, the Latitude and Longitude is that of some known point in the island.

COUNTRIES, KINGDOMS, EMPIRES, AND STATES IN NORTH AMERICA.

Countries.	Capitals.	Latitudes.	Longitudes.	Present Ruler.	Form of Government.
BRITISH AMERICA.					
Continent. Upper Canada	Toronto	43° 47′N.	79° 25′W.	Victoria I.	Limited Monarchy.
Lower Canada	Quebec	46 49	71 16		
New Brunswick	Fredericton	45 55	66 40		
Nova Scotia	Halifax	44 39	63 34		
Hudson's Bay Territory	York Fort	57 0	92 26		
Labrador	Nain	56 24	61 48		
Honduras	Belize	17 29	88 11		
Islands. Cape Breton	Sydney	46 5	60 16		
Prince Edward's	Charlotte Town	46 16	63 10		
Newfoundland	St. John's	47 35	52 39		
Arctic Archipelago	Port Bowen	73 14	88 55		
Vancouver's	Fort Victoria	48 34	124 8		
Bermudas	Hamilton	32 0	65 30		
Greenland	Godthaab	64 10	51 50	Frederick VII.	Limited Monarchy.
Russian Territory	New Archangel	57 0	135 45	Alexander II.	Absolute Monarchy.
UNITED STATES.					
New England. Maine	Augusta	44 10	70 0	President Lincoln.	Republican.
New Hampshire	Concord	43 0	71 30		
Vermont	Montpelier	44 17	81 19		
Massachusetts	Boston	42 22	71 4		
Rhode Island	Providence	41 51	71 25		
Connecticut	Hartford	41 30	72 30		
Middle States. New York	Albany	42 39	73 45		
New Jersey	Trenton	40 25	74 45		
Pennsylvania	Harrisburg	40 15	76 40		
Delaware	Dover	39 10	75 29		
Maryland	Annapolis	38 59	76 30		
Colombia District	Washington	38 52	77 1		
Southern States. Virginia	Richmond	37 34	77 30		
North Carolina	Raleigh	34 50	78 40		
South Carolina	Columbia	34 0	81 3		
Georgia	Milledgeville	33 10	83 10		
Florida	Tallahassee	30 30	83 50		
South-Western States. Alabama	Montgomery	32 53	86 26		
Tennessee	Nashville	36 0	86 45		
Mississippi	Jackson	32 15	90 28		
Arkansas	Little Rock	34 41	92 17		
Louisiana	Baton Rouge	30 27	91 18		
Texas	Austin	30 25	98 0		
North-Western States. Missouri	Jefferson	38 30	92 3		
Kentucky	Frankfort	38 12	84 53		
Ohio	Columbus	40 0	82 55		
Indiana	Indianapolis	39 45	86 0		
Illinois	Springfield	39 46	89 37		
Michigan	Lansing	42 46	84 35		
Wisconsin	Madison	43 3	89 17		
Iowa	Iowa City	41 36	91 39		
New Territories. New California	San José	37 15	121 50		
Minnesota	St. Paul	44 58	93 8		
New Mexico	Santa Fé	36 12	104 53		
Utah	Salt Lake City	40 31	111 56		
Oregon	Oregon City	45 28	122 30		

Countries, Kingdoms, &c., continued.

Countries.		Capitals.	Latitudes.	Longitudes.	Present Ruler.	Form of Government.
MEXICAN STATES.						
Eastern States.	Tamaulipas	Victoria	23° 30′	100 0		
	Vera Cruz	Vera Cruz	19 12	96 7		
	Tabasco	Tabasco	18 55	93 25		
Western States.	Occidente	Cinaloa	26 0	108 30		
	Xalisco	Guadalaxara	20 20	103 30		
	Michoacan	Valladolid	19 42	100 52		
	Mexico	Mexico	19 26	99 6		
	Puebla	Puebla	18 30	98 30		
	Oaxaca	Oaxaca	16 56	97 40		
	Chiapas	Chiapa	16 44	93 38	Native President.	Republican.
Interior States.	Chihuahua	Monclova	26 30	100 50		
	Durango	Durango	24 50	103 56		
	Zacatecas	Zacatecas	22 40	102 30		
	Cohahuila	Cohahuila	28 56	106 8		
	New Leon	Monterey	26 0	100 0		
	San Louis Potosi	San Louis	22 4	101 40		
	Guanaxuato	Guanaxuato	21 0	100 55		
	Quererato	Quererato	20 37	100 10		
Peninsula of California		Loretto	26 18	111 41		
Peninsula of Yucatan		Merida	21 0	89 4		
CENTRAL AMERICA.						
Independent States.	Guatemala	New Guatemala	14 37	91 20		
	Salvador	San Salvador	13 40	89 10		
	Honduras	Truxillo	15 54	86 2		
	Nicaragua	Leon	12 20	86 45	Native President.	Republican.
	Costa Rica	San Jose				
	Mosquito Territory	Greytown	11 0	83 0		
INSULAR WEST INDIES.						
The Bahamas.	Great Bahama		26 28	78 40		
	Lucaya		25 51	77 11		
	Eleuthera		25 0	76 12		
	New Providence	Nassau	25 5	77 22	Victoria I.	Limited Monarchy.
	San Salvador		24 8	75 18		
The Great Antilles.	Jamaica	Spanish Town	18 8	77 30		
	Cuba	Havannah	23 8	82 22	Isabella II.	Limited Monarchy.
	Porto-Rico	St. Juan	18 29	66 7		
	Hayti	St. Domingo	18 29	70 0	Native President.	Republican.
The Little Antilles.	Oruba		12 24	70 0		
	Curaçoa	Williamstadt	12 16	69 5	William III.	Limited Monarchy.
	Buen Ayres, &c.		12 19	68 30		
Virgin Islands.	St. Croix	Christianstadt	17 44	64 44		
	St. Thomas	Fort Christian	18 20	64 57	Frederic VII.	Limited Monarchy.
	St. John		18 19	64 44		
	Tortola	Roadtown	18 31	64 35		
	Virgina Gorda		18 31	64 21		
	Anegada		18 44	64 17		
Leeward Islands.	Antigua	St. John	17 10	61 57		
	Anguilla		18 16	63 3	Victoria I.	Limited Monarchy.
	St. Christopher	Basseterre	17 20	62 49		
	Montserrat	Plymouth	16 48	62 17		
	Nevis	Charlestown	17 11	62 43		
	Barbuda		17 43	61 52		
	Dominica	Roseau	15 18	61 28		
	St. Martin		18 4	63 14		
	Saba		17 39	63 19	William III.	Limited Monarchy.
	St. Eustatius		17 30	63 5		
	St. Bartholomew	Gustavia	17 54	62 53	Oscar I.	Limited Monarchy.
Windward Islands.	Guadaloupe	Basseterre	16 0	61 48		
	Deseada		16 20	61 7	Napoleon III.	Absolute Monarchy.
	Mariegalante	Basseterre	15 52	61 22		
	Martinique	Fort Royal	14 36	61 8		
	St. Lucia	Castries	13 57	61 14		
	St. Vincent	Kingston	13 9	61 15		
	Grenada	St. George	12 3	61 50		
	Barbadoes	Bridgetown	13 6	59 43	Victoria I.	Limited Monarchy.
	Tobago	Scarborough	11 0	60 45		
	Trinidad	Port of Spain	10 39	61 34		
Continent.	British Guiana	Georgetown	6 47	58 1		
	Dutch Guiana	Paramaribo	5 56	55 30	William III.	Limited Monarchy.
	French Guiana	Cayenne	4 56	52 15	Napoleon III.	Absolute Monarchy.

The *peninsulas* and *capes* in North America are the following. Peninsulas:—Melville Peninsula, Boothia, and North Somerset, in the Arctic Regions; East Main and Labrador in the British territory; Nova Scotia, east of New Brunswick; Florida, in the United States; Yucatan, in Central America; Lower California; and Alaska in the Russian territory. Capes: In the northern regions, projecting into the Arctic Ocean, Icy Cape, and Point Barrow, in the Russian territory; Cape

Bathurst, Cape Parry, and Cape Felix, in the British territory; also Cape Rennel, Cape Clarence, Cape Hay, Cape Adair, Cape Roper, Cape Walsingham, and Cape Enderby; Cape Chudleigh, in Labrador; Cape Sable, in Nova Scotia; Cape Cod, Cape Charles, Cape Hatteras, Cape Look-out, &c., all on the east coast of the United States; Sable Point, in Florida; Cape Catoche, in Yucatan; Cape Gracias-à-Dios, on the Mosquito coast; Cape Blanco, Central America; Cape Corrientes, Mexican States; and Cape St. Lucas, Lower California.

LESSONS IN MECHANICS.—No. XIII.

ROAD-MAKING AND PUBLIC WORKS.

OF ROADS IN GENERAL.

ROADS, or the way of communication from one place to another, are naturally divided into highways by land and highways by water.

The sea which breaks in yeasty foam at the base of our cliffs, affords the means of communicating with any place on our own shores, or on the coast of any other country. All that man has to do with the work is to provide harbours or ports for easy and convenient landing, and for safety to the vessels which make the voyage; and to place here and there, where most required, such guiding lights or warnings as the nature of the coast-line may render necessary.

Public works and modes of communication are of great importance; it is essential to furnish safe harbours and reliable guides, in the shape of lighthouses and beacons; and it is scarcely less important to look after the inland modes of communication both by road, rail, river, and canal. These include the natural and artificial modes of communication. The high road, which has been the high road ever since it echoed to the tramp of Roman soldiers, and perhaps before, may be regarded as a natural highway; modern iron roads intersecting the country, and covering it with a metallic net of broad and narrow gauge, may be regarded as the artificial road. Rivers afford a natural means of communication; canals an artificial route, imitative of the river.

Correctly speaking, the only natural highways are the rivers and the sea. Roads are only the result of necessity. It is not difficult to imagine a race of people dwelling in one island, but, for want of efficient means of communication, absolutely more widely separated from each other than we are from the other end of the earth; such a condition would be barbarous, but it is a condition in which every country has probably been at some period of its history. One of the first efforts of a people emerging from this state of barbarism would be to construct roads, to make a public highway. However rude their earliest attempts to do this might be, they would still be productive of so much that was really valuable as to encourage progress in the same direction. Roads are necessary to commerce, even in the earliest stages of society—pathway communications with various towns, recognised highways by which the trader may transport his goods; without such means of communication, no commerce could be carried on: hence we find that roads made and kept in repair are among the first indications of civilisation.

But highways, not being the peculiar property of any one person, although beneficial to all, have been much neglected; they have been allowed to fall into so ruinous a condition, as to be unsafe and unfit to travel; and again and again, among all nations, laws have been enacted and enforced to preserve for the public good what no private individuals were concerned to preserve for the good of the public.

The earliest roads on record are those of the ancient Egyptians and Romans, but these must not be regarded as simply commercial highways. They were made for the convenience of military movements. The famous roads of Semiramis were military, as the chief part of the commerce of Tyre and Carthage was carried on by coast navigation. Greece took no pains to form any adequate means of internal communication for her people. Rome, the grand imperial road-maker, was more careful to serve the interests of her soldiers than of her merchants. But for whatever purpose constructed, Roman highways still remain to attest to the enterprise and engineering skill of that invincible people who came, and saw, and conquered as well over material difficulties as over human foes. Via Appia, Via Aurelia, Via Flaminia, what stupendous works were these! There were paved roads between the capital and the chief towns; a paved road from Spain through Gaul to the Alps; paved roads through Savoy, Dauphiny, and Provence; and paved roads over Asia Minor and Hungary. No rude works were these: they were constructed on principles as sound and scientific as those of modern engineering skill; forests were felled, hills tunnelled, valleys filled up, rivers spanned with bridges, marshes drained: the Roman road-makers knew well what they were doing.

Our first English roads were of Roman origin. There were two grand trunk lines running at right angles to each other, from east to west, from north to south. From Richborough in Kent to Chester, passing through London, extends the ancient Watling Street; from London to Scotland, passing through Lincoln and Carlisle, is the famous Ermine Street. They were gigantic works, far beyond the requirements of the Britons, or of the Anglo-Saxon race—works that were suffered to fall into disuse, everything in the dark ages going to the bad.

So it was all over Europe, excepting in those parts which were essential to the passage of pilgrims to the East. But it was not until the middle of the seventeenth century that any real progress was made in road-making. The requirements of the hour were met as best they might be; private interest set itself up against public profit; peoples and governments alike failed to recognise the kindred and blended interests—interests closely identified—between society as a whole and every individual member of society.

"It is calculated that of the entire inhabited part of the globe, roads do not exist in more than *two-sevenths*. The extensive empire of Russia, with the exception of one or two main communications, such as that between Petersburg and Moscow, is without them. In general, the only practical communications through this vast territory are effected in winter, on the surface of the frozen snow, by sledges. On the return of summer, when the snow has disappeared, the communications become extremely difficult, slow, and expensive." There are many other countries in a similar condition. The French have made remarkable advances in this respect. The English have done the same. The first turnpike road in England was established in the reign of Charles II., but for many years afterwards the condition of our English roads was anything but creditable. Arthur Young has left us no very pleasing account of how he found them not quite a hundred years ago. Travellers, he says, will meet with ruts four feet deep, floating with mud only from a wet summer. The only mending the road received was that of tumbling a load of loose stones into the ruts. Speaking of a road near Newcastle, he says, "A more dreadful road cannot be imagined. I was obliged to hire two men at one place to support my chaise from overturning. Let me persuade all travellers to avoid this terrible country, which must either dislocate their bones with broken pavements, or bury them in muddy sand."

The first important step in road-making is, as nearly as possible, to produce a level or even footway. The nature of the ground over which the road is carried must be modified by artificial means. In some parts it has to be lowered, in others elevated; here soil has to be added, there it has to be taken away. This is the work of the excavator, and the shovel and pickaxe are the ordinary implements employed. Horses and carts are used in removing the earth from one part to another, as the level of the roadway may require.

ANSWERS TO CORRESPONDENTS.

A STUDENT.—The sentence should be, "This is *what* men mean," &c. The term *Nisi Prius* literally means "unless before." It is applied in law to a judicial writ, by which the sheriff is to bring a jury to Westminster Hall on a certain day, "unless before" the Lords Justices of the Sovereign go into his county to take assizes. They there dispose of the cause, and thus save expense and trouble to the parties, jury, and witnesses.

W. J. (Manchester) says, "I find great advantage in studying the POPULAR EDUCATOR, in observing the rules I have placed in the following lines:—

> 'Each chapter once attentively peruse;
> Digest the paragraphs your thoughts confuse;
> Again the whole review, as heretofore;
> Connection, then, and meaning, will be sure.
> Without a system you in vain may pore,
> Partake of less than half the valued store.'"

CURIOUS.—Captain Coram, founder of the Foundling Hospital, was born at Lyme Regis in 1668. He was bred to the sea, and became master of a vessel trading to the Colonies. Residing in the east of London, his attention was excited by the number of young children exposed to die through the cruelty or negligence of their parents. This excited his compassion, and led to the project of the Foundling Hospital. He laboured in this humane design for seventeen years, and, by his sole application, obtained for it the royal charter. He was highly instrumental in procuring another good design, namely, a bounty upon naval stores imported from the Colonies, and a scheme uniting the Indians in North America more closely to the British by the establishment of schools for native girls. The largest part of this man's life was spent in serving the public, and with so total a disregard to his private interests, that towards the latter part of it he was himself supported by the voluntary subscriptions of public-spirited persons, at the head of whom was Frederick, Prince of

Wales. When Dr. Brocklesby asked him whether he would be offended at a subscription being made for him, he nobly answered, "I have not wasted the little wealth of which I was formerly possessed in self-indulgence or vain expenses, and am not ashamed to confess that in my old age I am poor." He died at his lodgings in Leicester Square, March 29, 1751, and was interred in the vault under the chapel of the Foundling Hospital, where an ample inscription perpetuates his memory, as Hogarth's portrait has preserved his honest countenance. The Foundling Hospital was extremely popular while under the patronage of affluent people. Liberal grants were made from Parliament from 1756 to 1759. Children poured in from every part of the kingdom. This created alarm; it was suggested that these foundlings would grow up as aliens in the land—that "nobody's children" might rise up like the slaves of ancient Rome, and throw the whole kingdom into confusion. A Mr. Massie was the great pamphleteer of the time, who denounced, after an absurd and extravagant fashion of his own, the evils which were likely to result from such institutions. Parliamentary grants were withdrawn, and the society was made dependent on voluntary contributions.

FRENCH.—R. L. O.: The general rule for the repetition of the article is, that it should be used before every noun, and every word used as a noun having a separate meaning; the article is therefore repeated when one or two adjectives united by the conjunction *et* qualifies the one a noun expressed, the other a noun implied: as, *L'histoire ancienne et la moderne;* that is, ancient and modern history. The article should not be used before the numbers placed after the name of a sovereign, indicating the order of his succession; thus, *Charles dix* is understood to signify Charles *the* Tenth.—A. B. (Wilts): Idiomatic expressions are very common in French. *Ce n'est pas la mer à boire* simply implies something that is impossible, as drinking up the sea would be. Idioms and proverbial phrases of this kind throw light on the customs and peculiarities of a people. We talk of castles in the air, the French of castles in Spain—*chateaux en Espagne.* We use the expression, "Putting the cart before the horse;" the French say, "Putting the plough before the oxen"—*Il met la charrue devant les bœufs.*

MUSIC.—F. J. J. (Bawtry): We have read your long and sensible letter on Colonel Thompson's theory of the "duplicity of the dissonances." We must judge the colonel's theory not by some counter theory, but by experiment. He makes an instrument according to his theory. It is played in the hearing of many. He thus puts the question to the human ear: Does my theory produce the intonations which suit you best? The human ear, represented by many good judges, answers, "Yes." If so, what becomes of our counter *theory*—that because there is *simplicity* in the consonances (notes consonant with the key-note), there can therefore be no *duplicity* in the dissonances? Nature's clear answer is stronger than our logic. We have never heard an objection to the beauty and accuracy of tone produced by Colonel Thompson's instruments, but only to the complexity of their structure, especially in the key-board—mechanical difficulties which must be overcome.—ELECTICUS: You will find in Lesson IX., p. 373, sufficient instructions in the German concertina for your purpose.—G. V. (Manchester): In Lesson III., p. 99, we dealt with the "time," "accent," and "measure," as they must be looked at apart from the manner in which they are expressed on paper.—A. H. M.: You will find it most convenient to make the middle C of your sixteen glass harmonicon your DOH with the higher octave marks; to that your lowest note would be TE with the "one" below—your highest note DOH with "two" above. The glass harmonicon does not so easily get out of tune as the concertina, but the latter has many advantages.—LEILA: The vibrations of a pendulum are *longer*, not more *frequent*, in proportion as it is struck more forcibly. Why should those of a tuning-fork or drum be different? By striking your tuning-fork or guitar-string more violently than usual, you make the vibrations longer or wider than usual, not more frequent.

SHORT-HAND.—A YOUNG LEARNER: "G soft" requires no separate alphabetic character. It is a combination of *d* and *zh*. "Ch," in chair, is the *breath* correspondent of "G soft"—a combination of *t* and *sh*. See the words "page, knowledge, chapter, and handkerchief," illustrated in the second lesson. The characters may be either written upwards or downwards, according to the taste and convenience of the writer. The learner is fettered with no rule in this particular. The recapitulative table in the fourth lesson will serve to explain and simplify the list of prefixes.

T. G. P. N.—The word *dilemma* is derived from the Greek, from *dis*, twice; and *lemma*, an argument. It is generally applied to an argument the construction of which is such, that accept whichever proposition you may, the conclusion is always opposed to your design. The following is the case usually cited as an example of this dilemma in argument:—A youth, named Evathlus, engaged with Protagoras to learn dialectics upon condition that he should pay him a large sum of money the first cause he pleaded in, supposing he gained. Evathlus, when fully instructed, refused to fulfil the condition. Protagoras brings his action, arguing thus:—"You must pay the money, however the cause go; for if I gain you must pay, in consequence of the sentence, as being cast in the cause; and if you gain it you must pay, in pursuance of our covenant." "Nay," retorts the other; "which way soever the cause is decided, you will have nothing; for if I prevail, the sentence gives it that nothing is due; and if I lose, then there is nothing due by the covenant." It is said that the Court, unable to decide in favour of either party, ordered them to appear a hundred years afterwards to receive judgment.

NIL DESPERANDUM.—A fortiori, means *much more therefore*, or *for the stronger reason;* à priori, means *for a reason founded on the nature of the thing*, or *for a reason exactly such as we might expect;* à posteriori, means *for a reason founded on some previous argument, statement, or fact, admitted to be true;* primâ facie, means *at first sight;* a primâ facie argument is a specious or imposing argument. If a man "cannot know what conscience is, until he knows something of metaphysics," he is much to be pitied! Every transgressor of a *righteous law* must both *know* and *feel* what conscience is (see Rom. ii. 14, 15, and indeed the whole chapter).

T. GUY (Broomside): *Go*, in the passage "*Go* to the ant, thou sluggard," &c., is not an interjection, but the second person singular of the imperative mood of the verb *to go*. In the passages quoted from James, the words *go to* are the translation of the Greek *ago*, which, like the Latin *ago*, signifies literally *to do*, or *to be doing*, or *to hold, weigh, or consider;* they might, therefore, be translated, CONSIDER, or WEIGH WELL, *what I am going to say;* it is, therefore, used adverbially, like the words *behold, see, look, come now, well*, &c. The same words *go to*, in the passages quoted from Genesis, are the translation of the Hebrew *haba*, which signifies, literally, *to give place, or set*—that is, *to put yourselves in the attitude of attention;* as much as to say, *hearken, listen*, &c., and is used adverbially, just like the preceding words. As to the translation of Exodus xxxii. 35, it is so literal as to be obscure; it should be, "they were the originators of the calf which Aaron made." The fact is, they compelled him to make it, and he submitted to them through fear.

LITERARY NOTICES.

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LESSONS IN GEOLOGY.—No. XXXII.

By Thomas W. Jenkyn, D.D., F.R.G.S., F.G.S., &c.

CHAPTER III.

ON THE INFLUENCE OF ATMOSPHERIC AGENTS ON THE EARTH'S CRUST.

SECTION I.

ON THE WEATHERING OF ROCKS.

Fig. 73.

Weathered Rocks at Capri, near Naples.

In the lessons embraced by the preceding chapters and sections, I have endeavoured to explain to you the parts which fire and running water have acted in effecting changes on the crust of the earth. Our new chapter brings us to another class of powerful agents, which exert an unwearied agency in changing the surface of the globe. We have now to examine the decomposition, disintegration, and decay produced in the earth's crust by meteoric agents or atmospheric influences.

By these atmospheric agents and influences, I mean the gases of the air, heat and cold, dryness and moisture, rains and winds, light and electricity. The operations of these slow but incessant agents, assisted by the laws of gravity, form a wide-spread system of disintegration and destruction, which may be traced over the whole surface of the earth, from the pinnacles of the highest mountains down to the level of the sea.

There is no rock, however hard, that does not bear some marks of what is termed *weathering*, or some traces of the action of the atmosphere upon it. All the mineral substances of which any rock is composed are well known to have greater or less tendency to combine with the oxygen of the atmosphere, especially when under the favourable circumstances of changes of heat and moisture, and probably of light and electricity. Carbonic acid and water, also, are perpetually absorbed by rocks in considerable quantities.

The change which the atmosphere produces in the surface of rocks is exceedingly variable, and depends much upon local circumstances. A rock of the same mineral composition which may undergo complete decay in one situation, will in another suffer but a trifling disintegration. The result of these combinations between meteoric agents and rocks, whether the action be chemical or mechanical, is to loosen the coherence between the particles on the surface, and to induce a tendency to decomposition and destruction, or what is commonly called, crumbling.

It is impossible to contemplate the surface of mountains and valleys, of continents and islands, without being struck with the stupendous effects of the slow but constant and long progression of atmospheric agency. These effects, by the slowness of their operation, and comparative diminutiveness of their day's work, attest a lapse of time and ages far beyond all calculation.

The operations of atmospheric agents upon rocks are, perhaps, best studied in granite countries, or in districts of red sandstone and shales. The Tors and the Logan stones of Devon and Cornwall may be mentioned as excellent specimens of the weathering of rocks. These specimens become the more striking by the circumstance, that granite is so little subject to change as to be proverbially used as a symbol of endurance and immutability, and is on that account selected as the material for the erection of bridges and great national works of architecture. Nevertheless, granite, under particular circumstances of texture, climate, and exposure, is remarkably liable to disintegration.

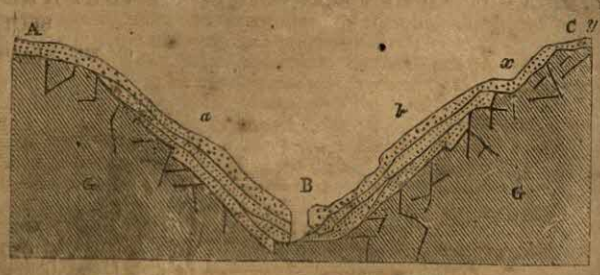
The Tors of Dartmoor and the Logan stones of Cornwall are composed of granite, which, as you may see in the blocks of Waterloo Bridge, are divided into masses of cubical or prismatic shape. Through the influence of the atmosphere or weather, the particles in the hard surface of the granite, which are most exposed to the air and rain, become loosened and separated, and the masses, which were originally prismatic, acquire an irregular shape. In short, the rock crumbles into shapeless gravel.

The amount of the disintegration, and the immense lapse of time which the atmospheric operation occupied, is indicated by the depth of the crumbled surface of all the districts around these Tors and Logans. Indeed, in any area, whatever may be the nature or the mineral character of the rock, whether porphyry, slate, compact sandstone, or trap, the surface is found shattered, and crumbled to a considerable depth.

The phenomena of this weathering and crumbling throws light upon other operations which have taken place in the early history of these disintegrated rocks. They evidently prove that the valleys of the neighbourhood had been formed, by other agents, long before the process of decomposition by weathering commenced on the surface; for they show that the general outline and form of the land, in hill and valley, must have been, at the time of their upheaval from the sea, much the same as they are now.

Our next diagram will assist you to understand the geological facts which I have just stated.

Fig. 69.



The Disintegration of Granite by Weathering.

In the above diagram, the curved line A B C shows the disintegration of the granite rock c G, following a line of previous elevation and depression. A part of the rock, from *x* to *y*, on account of some peculiarity of lithological composition, has been able to resist the influence of the atmosphere so as to show very little weathering. The influence of moisture and frost is seen to have entered the body of the rock somewhat deeply, and to have crumbled much of its mass under the surface soil. In the valleys below A and C, the accumulation of the detritus is greater than on other parts of the line. This was to be expected. It is obvious that the weather-worn particles, disintegrated on inclined planes, will very often fall by their own gravity from their original position, and their downward progress towards the valley will be increased by the action of showers of rain or that of melted snow. As this process goes on for years and ages, the quantity of detritus accumulates in some instances to a very great depth. When this accumulation of weathered materials has been cut through by a rivulet, or in making a new road, it sometimes has a stratified appearance, as if the loosened and crumbled fragments from the hill sides had slidden or slipped over each other at the bottom of the valley, as is faintly represented under *a* and *b*. Such is the extent of this disintegration in granite, that it is found in the quarries at Dartmoor to the depth of fifty or sixty feet, as represented by the cracks in the diagram.

Fig. 70.

A Logan Rock, Cornwall.

In Cornwall, and other places, this action of the weather has, in several instances, worn away part of the jointings of large blocks of granite, which are, consequently, left resting on a kind of central pivot. From this circumstance, these masses of weathered granite can, notwithstanding their enormous bulk and weight, be easily moved. Stones in this position are

called Logans, or rocking-stones, and are said to have been objects of superstition among the Druids.

Our diagram, fig. 71, represents two natural piles or combination of rude rocks, A and C, shattered and disintegrated by the atmosphere. The centre stone B is a Logan or Rocking-stone.

Fig. 71.

Disintegration of Granite and formation of Logan Stones by Atmospheric Influence.

This disintegration of granite is common to most countries. The results of it form a striking feature of large districts about Clermont in Auvergne and about the Eastern Pyrenees, where the surface is, in many places, so much decomposed, that the traveller may imagine himself to be in large tracts of gravel beds. This process, under favouring circumstances, is very rapid. On one occasion a hollow way or cutting had been blasted through a granite rock in the Eastern Pyrenees, and in six years it was found that the upright sides or walls of the cutting had been so much disintegrated by the carbonic acid of the atmosphere, that the solid rock to the depth of three inches was in a crumbling condition. In other districts, large masses of granite rock are found which look quite solid, yet when touched by the hand or trodden by the foot shiver to powder.

In some parts of Finland, the granite is so liable to decomposition, that an enormous block of it may be seen with a weathered hole in it large enough to admit the passage of a horse and cart. These blocks rest upon surfaces of the underlying granite rock, which, from a short distance, look as if they would last for ever; and yet when you apply a knife or a chisel to it, you can cut it and shape it to any form you please, as if it were a piece of loaf sugar.

This decay of granite is called by French geologists the granite sickness, and it is a consumptive disease from which there is no recovery when it has once entered the rock. The walls of the prison at Dartmoor are built of surface or weathered granite, and the result is that each block has become a spongy mass, continually absorbing a moisture that rusts the iron bars intruded into it. By this means the cells of the prison are so damp that they can be used only by covering the walls inside and out with Roman cement or with tiles. On the other hand, the granite used for the Nelson Monument in Trafalgar-square, is obtained from a depth to which atmospheric decomposition had not reached. It will, therefore, be the more enduring.

On the surfaces of some granite rocks are frequently found strangely-fashioned holes, which are called Rock-basins, which some antiquarians have ascribed to the hands of the ancient Druids, but which, in fact, are due to the silent and slow chiselings of the invisible gases of the atmosphere. These holes consist of several basins, apparently hewn out of the rock, some of which are eighteen feet in circumference and six in depth.

At Peninnis Point, in the Scilly Islands, there are curious examples of these basins. In that locality they are called by the peasants, "the Kettle and Pans." They occur in the surface of immense blocks of granite on the top of the promontory, and are about three feet in diameter and two in depth. Most of them are nearly circular, but many of them have swerving curves on the edges, some of them have their sides perfectly perpendicular and their bottoms flat. The granite blocks in which these rock-basins are found are six or seven yards high, with surfaces of eight or nine yards square. In some cases the basins are exceedingly large, as if they had been formed by a junction of three or more other basins by advancing decomposition.

All these basins hold water after rain. One would be inclined to ascribe their formation to the chemical agency of the water, were it not that similar indentations or basins are found in the *sides* of blocks as well as on their surfaces. One of the blocks at Peninnis Point has, on one of its sides, such a cavity or basin six feet long, five feet wide, and four feet deep.

Fig. 72.

The Kettle and Pans at Peninnis, Scilly Islands.

These and similar facts, not limited to granite, but developed in all kinds of rocks, must excite in your mind the inquiry, what elements can there be in the atmosphere capable of such destructive operations? The principal agent, apparently very feeble and almost contemptible, is moisture, considered partly as the chemical solvent of various substances, and partly as the medium by which carbonic acid and oxygen in a dissolved state are applied to the rocks which are being changed. The two invisible and powerful agents in the weathering and the disintegration of rocks are carbonic acid and oxygen.

Chemists inform us that carbonic acid is capable of being largely dissolved by the moisture of the atmosphere, and becomes thus peculiarly fitted for the work of a chemical agent. Though the Feldspar, which forms a great part of the hardest rocks such as granite and porphyry, will withstand for some time the corrosive action of even muriatic acid, it will readily give way before moisture charged with carbonic acid. This affects the feldspar rapidly, causes it to decompose, and shivers its most obdurate masses into crumbled powder and soft clay. The reason is this, granite is largely composed of feldspar. Feldspar contains in its composition a great quantity of alkali, for which carbonated water has an affinity; which means, that it tends to unite with it and to dissolve the alkali out of it. As the alkali dissolves out of the feldspar, the granite crumbles in pieces, and turns into powder or clay.

Another invisible and mighty agent of destruction contained in the atmosphere is oxygen gas, which acts powerfully upon different rocks according to the elements of their composition. This gas is peculiarly destructive to rocks which have iron in their composition. Whenever you see reddish brown stains on the surface of weathered rocks, you may be sure that such rocks contain some compound of iron. The reddish stains are occasioned by the efforts of the moisture of the atmosphere to decompose the iron and to cause it to be dislodged and removed. The oxygen unites with the iron, and by this combination loosens the particles of the rock. The result of this operation is, that the hard rock becomes cracked, crumbled, and softened, until, at last, it becomes pulverised dust. As this gas is soluble in water, though it be but slightly, it may, in its dissolved state in rain water, exert a destructive power over the surface of rocks which are pelted or moistened by the winter shower.

This atmospheric agency in weathering and disintegrating the surface rocks of the earth's crust has produced great benefits to the world.

The effects of the combined operations of all these atmo-

pheric and gaseous agencies are finely illustrated in the holes, caverns, arches, and avenues, sometimes of most grotesque shapes, which are found in rocks of all descriptions. One of the rocks in Capri, an island near the coast of Naples, furnishes a good illustration. The rock consists of lava, weathered into crevices and passages of the most fantastic forms.

It is to this silent but powerful agency that we are indebted for all our porcelain clays. Your earthenware jug and flower-pot, and your splendid and costly china dishes and vases, are produced from a material which is formed by the combined influences of moisture, air, and carbonic acid. The rocks from which these different clays were derived may have been of various mineral character, but they all agreed more or less in the chief ingredients of their composition.

About Dartmoor and in Cornwall there are rocks of a fine white granite, which present striking examples of the disintegration effected by the weather. On their surface, and to a considerable depth in their substance, the rock is altered to a soft matter resembling mortar. This soft matter is disintegrated granite, and is collected together and washed. The water that washes it is conducted into tanks, where it deposits a white earthy matter which constitutes the beautifully white fine clay employed in the manufacture of porcelain. Not less than ten thousand tons of this white clay, the produce of the weather upon granite, is exported every year from Cornwall for the use of the English potteries. The facts are the same as to the clays employed by the Chinese in their exquisite porcelain.

What I have said of porcelain clay is, in a measure, true of all other clays. Porcelain clay is white, but earthenware clay is more or less yellowish, brown, and even red. This difference in the colour does not essentially depend upon any difference in the formation of the clay as clay, for each clay is derived from the decomposition of feldspar. The reason of the difference is this. Some rocks which contain feldspar contain also iron, or some colouring matter which communicates its stain to the clay derived from it.

The signal fact, however, which makes this atmospheric action upon rocks more important than any other instances of it, is the disintegration of the surface of rocks which contain silver and gold, a fact that has charmed thousands to California and Australia.

Many have wondered how silver ore came to be discovered in such out-of-the-way situations as the bleak and craggy summits of the Andes of South America. Atmospheric agents will answer all the questions upon these topics. Granite, porphyry, and slate are hard rocks, but silver ore is harder still. While the rocks which contain veins of silver are readily decomposed and crumbled away by air and weather, the sturdy metal will resist these influences. The consequence is, that, as the surface rock weathers and moulders away in the cliff, the veins of silver will come at last to project and stick out from the side of the rock, and these jutting masses will be seen and marked by the first visitor. One of these valuable mines was discovered by a driver, who had to throw a stone at one of his loaded donkeys while passing over the Cordilleras. Finding that it was heavy in the throw, he picked it up when he came to its place, and found that it was full of pure silver.

The diggings of gold, delved in the sands of rivers and valleys in California and Australia, furnish other examples of the disintegrating influences of the weather. Gold is scattered in small particles through the substance of various ancient rocks. By the incessant wearing down of the surface of these rocks, these gold particles are set loose, and then, either fall from the sides of the rock, or are washed away and transported by rains and mountain torrents, to valleys at a distance from their native rock.

In this lesson I have spoken of atmospheric action upon rocks as being much modified by favourable circumstances, which means circumstances of climate favourable to disintegration. This fact can be verified in any country or district, for all parts supply illustrations of granite, porphyry, limestone, &c., disintegrating rapidly in one place, while their decomposition is almost imperceptible in another. In no country, perhaps, can we find examples of this so palpable and so decisive as in Egypt. The operation of these causes of decay, rapid where the atmosphere is charged with moisture, or where rains and winds are prevalent, but imperceptible where moisture is absent, is clearly illustrated in Egypt. In Lower Egypt, especially in the district called Delta, the atmosphere is filled with exhalations from the neighbouring Mediterranean Sea. Here the ancient cities, Memphis, and Heliopolis, built of massive granite, are now mere heaps of ruins. Not only do not the stones lay one on another, but the very blocks are crumbled by the weather. Even the proud granite obelisks at Alexandria are becoming more and more unreadable through the corroding action of the weather upon the inscriptions.

If you leave the Delta, and travel on to Upper Egypt, you find that there, in an atmosphere not favourable to disintegration, the monuments, the tombs, and the inscriptions, exhibit no signs of decay, but appear as well defined and as fresh as if they had just come from the artist's chisel. Even the black bricks, made of the mud of the Nile and dried in the sun, and exposed to the atmosphere for three or four thousand years, still retain their hardness, and firm position in the temples, pyramids and tombs, and present their hieroglyphics and architectural ornaments as distinct in outline as in the first year.

LESSONS IN ENGLISH.—No. XLIX.

By JOHN R. BEARD, D.D.

NUMBER *(continued)*.

Swine is an old Saxon plural from *sow*. Like *codfish*, we say in the singular and in the plural haddock, pike, ray, salmon, sole, sturgeon, trout, mackerel, turbot. *Sole* has, however, a plural form in *s*, as *soles*, e. g., "send me three pair of soles." *Fish*, too, has a specific plural form, *fishes*, used in the older states of our language, as in the authorised translation of the Bible.

Some words *singular* in form are used in the *plural* without any change, e. g.,

Singular.	*Plural.*
cannon	as, *ten* cannon.
head	*forty* head *(of cattle)*.
horse	*twenty* horse *(power)*.
foot	*a two* foot *(rule)*.
pound	*six* pound *(of beef)*.
sail	*forty* sail *(of ships)*.
shot	*a hundred* shot.
stand	*fifty* stand *(of arms)*.
stone	*twelve* stone *(in weight)*.
brace	three brace *(of partridges)*.
couple	*four* couple.
leash	*five* leash *(of hounds.)*
dozen	*twenty* dozen *(of eggs)*.

These deviations from analogy, though strictly proper, inasmuch as they are justified by authority, are not to be extended analogically, and there seems to be a disposition to bring some of them into conformity with rule. Thus we say, "the chamber is twenty *feet* long and ten *feet* high;" also, "I have paid you *four pounds*;" whereas the phrase used to be *four pound*.

Some words in their nature do not take and others do not admit of a plural form. Collective nouns, such as *fleet, sail*, &c., having in the singular a plural import, do not take a plural form. Abstract nouns, such as *whiteness, knowledge, progress*, being in their nature restricted to unity of idea, do not admit of a plural form. Sometimes, however, the idea which an abstract noun conveys, is considered as distributed, and then it may assume a plural form, as *truths, virtues, sanctities*. This use is to be strictly limited by a regard to authority. A latitude here gives either an affected or poetic air to composition, e. g., as when a young writer speaks of "the frosts of winter," "the rains of spring," "the heats of summer," "the chills of autumn," or "the sanctities of the hearth."

The following words are used exclusively in the plural, namely, such as, consisting of two parts, have before them the term *a pair;* as

A pair of bellows.	A pair of nippers.	A pair of snuffers.
,, ,, breeches.	,, ,, nutcrackers.	,, ,, spectacles.
,, ,, braces.	,, ,, pantaloons.	,, ,, stays.
,, ,, colours.	,, ,, pincers.	,, ,, tongs.
,, ,, compasses.	,, ,, scissors.	,, ,, trousers.
,, ,, drawers.	,, ,, shears.	,, ,, tweezers.

When the words *a pair* is the subject of the proposition, the verb must be in the *singular;* but when *a pair* is dropped, and a word such as *bellows, drawers*, &c., is the subject, the verb must be in the plural, e. g.

This pair of breeches *is* too small.
These breeches *are* too small.

The following 91 nouns are used exclusively in the plural number:—

Acoustics, *the science of sound.*
Amends, *reparation.*
Ancients, *the men of old.*
Annals, *yearly histories.*
Antipodes, *the inhabitants of the parts of the globe opposite to our own.*
Archives, *records kept in safety.*
Arms, *weapons.*
Ashes, *remains of the dead.*
Assets, *property to one's credit.*
Betters, *one's superiors.*
Billiards, *a game of skill.*
Boardwages, *wages for mere subsistence.*
Bowels, *the entrails.*
Calends, *the beginning of the month with the Romans.*
Cards, *instruments of gambling.*
Cattle, *the larger domesticated animals.*
Clothes, *vestments.*
Contents, *what a book, &c., has or holds.*
Customs, *taxes levied as import duties.*
Downs, *hillocks of sand on the sea coast.*
Draughts, *a game of skill.*
Dregs, *sediment.*
Effects, *a man's personal property.*
Embers, *smouldering coals.*
Entrails, *the internal parts of animal bodies.*
Environs, *the places round a town or city.*
Ethics, *the science of morality.*
Filings, *particles rubbed off iron, &c., by rasping with a file.*
Fives, *a game with balls.*
Goods, *property, wares.*
Grains, *malt after it has been brewed.*
Greens, *cabbage, &c.*
Hatches, *doors in a ship's deck.*
Head-quarters, *the post of the commander-in-chief.*
Hollands, *a kind of gin.*
Hydraulics, *the science of the motion of water in pipes.*
Hydrostatics, *the science of water pressure.*
Hysterics, *fainting fits.*
Ides, *the 15th of the month with the Romans.*
Inferiors, *those considered below you.*
Intestines, *the bowels.*
Italics, *a species of letter-press.*
Leading-strings, *means for guiding infants in their trying to run alone.*
Lees, *the sediment in wine.*
Letters, *literature.*
Literati, *men of letters.*
Lodgings, *a temporary abode.*
Manes, *the shades of the departed.*
Mathematics, *the sciences of number, magnitude, and quantity.*
Matins, *morning prayers.*
Measles, *a disease of childhood.*
Mechanics, *the science of moving powers.*
Metaphysics, *the science of mind.*
Mnemonics, *the science of memory.*
Moderns, *men of recent times.*
Morals, *character and principle.*
Nuptials, *ceremony of marriage.*
Oats, *a kind of corn.*
Obsequies, *funeral observances.*
Odds, *inequality.*
Optics, *the science of vision.*
Orgies, *bacchanalian riot.*
Physics, *natural philosophy.*
Pleiads, *the constellation of the Pleiades.*
Pneumatics, *the science of atmospheric pressure.*
Politics, *the science of government.*
Prognostics, *means of foretelling.*
Pyrotechnics, *the art of making fireworks.*
Quarterings, *the coats of arms in heraldry.*
Quarters, *station for soldiers.*
Regimentals, *military costume.*
Rudiments, *first principles.*
Sessions, *a tribunal sitting quarterly.*
Shackles, *chains, impediments.*
Shambles, *place where butcher's meat is sold.*
Shavings, *that which is brought off wood or iron by the plane.*
Soundings, *casting the lead; the sea-bottom where an anchor will hold.*
Statistics, *the science of facts founded on numbers.*
Subsidies, *supplies of men and money for war.*
Superiors, *those who are above you.*
Tactics, *modes of proceeding.*
Therapeutics, *the science of healing.*
Tidings, *news, information.*
Trappings, *ornaments for horses, carriages, &c.*
Vapours, *low spirits.*
Vespers, *evening prayers.*
Victuals, *food.*
Vitals, *the parts of the body on which life depends.*
Wages, *workmen's pay at stated periods.*
Wares, *merchandise.*
Waters, *mineral water, or a mineral spring.*

Had we space, we might be able to assign the reason why these nouns severally are used in the plural only. One instance may be taken. There is a class of nouns, such as acoustics, physics, metaphysics, &c., which claims attention. These words are of Greek origin. They in each case denote a science, and they are in the plural because our English translators put into the plural the several corresponding Greek words, which are in the plural, when first they rendered the Greek terms into English. Thus, in translating Aristotle they found the science of material things, called *ta physica*, that is, Aristotle's treatise on *material things*, and so, in servile obedience to their Greek master's usage, they coined the word *physics*. Another treatise by the same authority was designated *meta ta physica* (things to be studied *after physics*,) which consequently they rendered *metaphysics*; that is, the *science of mind*, to which Aristotle thought the student should apply not till he had mastered the *science of matter*.

Some nouns have in the plural a different signification from what they bear in the singular, e. g.,

Singular.	*Plural.*
Arm, *a limb of the body.*	Arms, *weapons of war.*
Ash, *the name of a tree.*	Ashes, *the remains of anything burnt.*
Cloth, *woven flax, cotton, or wool.*	Clothes, *the dress or clothing of the body.*
Compass, *limited space, enclosure, apparatus for steering a ship by.*	Compasses, *an instrument for drawing circles.*
Drawer, *that which draws.*	Drawers, *things (a garment) drawn on; a dress.*
Light, *that which proceeds from a luminous body.*	Lights, *luminous bodies.*
Moral, *a didactic sentence.*	Morals, *the character, the principles of action.*
Organ, *a musical instrument.*	Organs, *parts of the body possessing functions.*
Pain, *the cause of uneasiness.*	Pains, *labour, trouble, toil.*
Physic, *medicine.*	Physics, *natural philosophy.*
Quarter, *a fourth part, a region.*	Quarters, *lodgings, depot.*
Snuffer, *one who snuffs.*	Snuffers, *an instrument for snuffing a candle.*
Study, *application to learning.*	Studies, *the subjects learned.*
Vapour, *aeriform matter.*	Vapours, *low spirits.*
Wit, *knowledge, ingenuity.*	Wits, *the senses, sound mind.*

Of compound words there are two classes, one in which the sign of the plural is added to the former word, the other in which it is added to the latter word, e. g.,

COMPOUNDS WITH THE *s* ADDED TO THE FORMER WORD.

Singular.	*Plural.*
Attorney-General	Attorneys-General
Solicitor-General	Solicitors-General
Knight-Errant	Knights-Errant
Cousin-German	Cousins-German
Court-Martial	Courts-Martial
Son-in-law	Sons-in-law
Power-of-Attorney	Powers-of-Attorney
Chancellor-of-the-Exchequer	Chancellors-of-the-Exchequer

COMPOUNDS IN WHICH THE *s* IS ADDED TO THE LATTER WORD.

Singular.	*Plural.*	*Singular.*	*Plural.*
A man-servant	man-servants	A cock-sparrow	cock-sparrows
A maid-servant	maid-servants	A spoonful	spoonfuls
A wine-glass	wine-glasses	A mouthful	mouthfuls
A man-trap	man-traps	A handful	handfuls

Names of persons may be in the plural when more persons than one are intended, as, the two Catos, the Scipios; also when a proper name is used descriptively, e. g., *the Ciceros of the age are few*; the *Ciceros*, that is, *the great orators*. Hence good English usages would require *the Miss Smiths, the Mr. Dobsons*. Regard to French idiom has, however, for some time required *the firm of Messieurs Potter and Norris*, or *Messrs. John Wilson and Sons*. There is, therefore, some excuse for the affectation now almost constantly seen, when two sisters open *a ladies' school*, namely, *the Misses Brown* or *the Misses Tinker*. Such deviations from pure English require to be checked.

EXERCISES.—COMPLETE.

The choruses were very fine. Leonidas was a hero. I have received two cargoes of cotton. A he-wolf and two she-wolves were killed. I recommend you to read Johnson's "Lives of the Poets." Do not kill flies. I have bought a pen-knife. The two armies met at day-break. In passing through the valley, I saw a monkey. The environs of London are very beautiful. How can I make amends for the harm I have done you? Paley is too highly esteemed as a teacher of ethics. Locke's metaphysics are despised by the scholars of Kant. The prime minister of England is the servant and the organ of the queen. Organs were introduced into Christian churches about the ninth century. Lord Brougham was the most ready but not the most learned of all our Lord Chancellors. Old Thomas Parr, who lived a hundred and fifty-two years, had eight sons-in-law and four daughters-in-law.

EXERCISES.—INCOMPLETE.

The tree is full of—. She is a lovely—. That child has the hooping-cough, it must not play with the other—. Yesterday I saw one black mouse and two white—. Our cook has bought a fat goose; are—cheap in this place? Have you a penny? Yes, here are six—which make six—. In London there are more than six hundred (church). In the United States of America the—are

still slaves. Two—make a whole. London is the largest of all the—in the world. The French and English—like fools have often fought bloody—. All good—must go on a pilgrimage to Mecca. Nelson's fleet at the Nile consisted of eighteen—; that of the French was seven—stronger, and had besides much heavier—. Give me a—of bread; you may have as many—as you want.

Parsing.

Cherubim and Seraphim bow and worship around the throne of God, adoring his perfections in their inmost souls.

Cherubim, a common noun, of Hebrew origin, in the plural number, from cherub, forming together with *seraphim* the subject of the verb *bow*.

And, a conjunction, coupling the nouns *seraphim* and *cherubim*.

Seraphim, a noun common, in the plural number, from the Hebrew noun *seraph*; *seraphim* is part of the compound subject to the verbs *bow* and *worship*.

Bow, an intransitive verb, present tense, third person plural number, agreeing with the subject *cherubim* and *seraphim*.

And, a conjunction uniting *bow* and *worship*.

Worship, an intransitive (sometimes transitive, as in *they worship God*) verb, present time third person plural, agreeing with the subject *cherubim* and *seraphim*.

Around, a preposition governing *throne*.

The, the definite article.

Throne, a common noun, singular number, forming its plural by the addition of *s*, and dependent on the preposition *around*.

Of, a preposition governing the noun *God*.

God, a proper noun, singular number, having, from its signification, no plural, though *gods* is used when false divinities or idols are meant.

Adoring, a present participle from the transitive verb to adore agreeing with cherubim and seraphim, and governing *perfections*.

His, a possessive pronoun, from the personal pronoun *he*, of the third person singular number, plural *their*, agreeing with *perfections*.

Perfections, a common noun from the Latin per, *through*, and facio, *I make* (E. R. *perfect*), in the plural number, singular *perfection*, the object to the participle *adoring*.

In, a preposition governing *souls*.

Their, a possessive pronoun, third person plural, singular *his*, agreeing with *souls*.

Inmost, an adjective in the superlative degree, made up of the Saxon elements *in* and *most*, and agreeing with *souls*.

Souls, a noun common, of Saxon origin, plural number, singular *soul*, dependent on the preposition *in*.

Words with their proper Prepositions to be formed into Sentences.

F. R.

Disappointed of,	dis, *not*, *ad*, to, punctum, *a point*
Disapprove of,	dis, *not*, probo, *I approve*
Discourage from,	dis, *not*, cœur, *heart*
Disgusted at,	dis, *not*, gustus, *taste*
Dislike to,	dis, *not*, licean (Sax.), *to like*
Dismission from,	dis, *not*, mitto, *I send*
Disparagement to,	dis, *not*, par, *equal*
Dispense with,	dis, *not*, pendo, *I pay*
Dispose of,	dis, *in different ways*, pono, *I place*
Dispossess of,	dis, *not*, possideo, *I possess*
Dispute with,	dis, *differently*, puto, *I think*

LESSONS IN FRENCH.—No. LX.

By Professor Louis Fasquelle, LL.D.

§ 60. Table of the Regular Terminations of the Four Conjunctions.

Conjugation.	Infinitive	Present Participle.	Past Participle.	Person.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
	er.	ant.	*S. g.*	1	e,	ais,	ai,	erai,	erais,		e,	asse,
			é, *mas.*	2	es,	ais,	as,	eras,	erais,	e,	es,	asses,
1st	CHANT-	CHANT-	ée, *fem.*	3	e,	ait,	a,	era,	erait,	e,	e,	ât,
ER.			*Plur.*	1	ons,	ions,	âmes,	erons,	erions,	ons,	ions,	assions,
			és, *mas.*	2	ez,	iez,	âtes,	erez,	eriez,	ez,	iez,	assiez,
			ées, *fem.*	3	ent.	aient.	èrent.	eront.	eraient.	ent.	ent.	assent.
	ir.	issant.	*Sing.*	1	is,	issais,	is,	irai,	irais,		isse,	isse,
			i, *mas.*	2	is,	issais,	is,	iras,	irais,	is,	isses,	isses,
2nd	FIN-	FIN-	ie, *fem.*	3	it,	issait,	it,	ira,	irait,	isse,	isse,	ît,
IR.			*Plur.*	1	issons,	issions,	îmes,	irons,	irions,	issons,	issions,	issions
			is, *mas.*	2	issez,	issiez,	îtes,	irez,	iriez,	issez,	issiez,	issiez,
			ies, *fem.*	3	issent.	issaient.	irent.	iront.	iraient.	issent.	issent.	issent.
	evoir.	evant.	*Sing.*	1	ois,	evais,	us,	evrai,	evrais,		oive,	usse,
			u, *mas.*	2	o's,	evais,	us,	evras,	evrais,	ois,	oives,	usses,
3rd	REC-	REC-	ue, *fem.*	3	oit,	evait,	ut,	evra,	evrait,	oive,	oive,	ût,
OIR.			*Plur.*	1	evons,	evions	ûmes,	evrons,	evrions,	evons,	evions,	ussions.
			us, *mas.*	2	evez,	eviez,	ûtes,	evrez,	evriez,	evez,	eviez,	ussiez,
			ues, *fem.*	3	oivent.	evaient.	urent.	evront.	evraient.	oivent.	oivent,	ussent.
	re.	ant.	*Sing.*	1	s,	ais,	is,	rai,	rais,		e,	isse,
			u, *mas.*	2	s,	ais,	is,	ras,	rais,	s,	es,	issent,
4th	VEND-	VEND-	ue, *fem.*	3		ait,	it,	ra,	rait,	e,	e,	ît,
RE.			*Plur.*	1	ons,	ions,	îmes,	rons,	rions,	ons,	ions,	issions.
			us, *mas.*	2	ez,	iez,	îtes,	rez,	riez,	ez,	iez,	issiez,
			ues, *fem.*	3	ent.	aient.	irent.	ront.	raient.	ent.	ent.	issent.

§ 61.—Formation of the Tenses.

(1.) The tenses are simple or compound.

1. We call those simple tenses, which do not borrow one of the tenses of the auxiliaries *avoir* and *être*.

2. We call those compound tenses, which are composed of the tenses of *avoir* and *être*, and the participle past of a verb.

(2.) Among the simple tenses, five are called primitive, because they serve to form the other tenses. They are—

1. The present of the indicative;
2. The past definite;
3. The present of the infinitive;
4. The participle present;
5. The participle past.

(3.) The other simple tenses, called derived tenses, are formed from the primitive.

(4.) The present of the indicative forms the imperative by suppressing the pronouns: as, je chante, *chante*; nous chantons, vous chantez, *chantons, chantez*. It will be seen that the third person of the singular and plural of the imperative, is properly the third person of the singular and plural of the subjunctive, used imperatively.

(5.) The past definite forms the imperfect of the subjunctive, by changing *i* into *sse* for the first conjugation: as, je chantai, *que je chantasse*, and by adding *se* for the other conjugations: as, je finis, *que je finisse*; je reçus, *que je reçusse*; je vendis, *que je vendisse*.

(6.) The present of the infinitive forms:—

1. The future absolute, by adding *ai* for the first and second conjugations: as, chanter, *je chanterai*; finir, *je finirai*; and by changing *oir* and *re* into *rai* for the other two conjugations: as, recevoir, *je recevrai*; rendre, *je rendrai*.

2. The conditional present is by French grammarians formed from the future by the addition of *s*: as, je chanterai, *je chanterais*; je finirai, *je finirais*; je recevrai, *je recevrais*; je vendrai, *je vendrais*.

(7.) The participle present forms:—

1. The imperfect of the indicative by changing *ant* into *ais*: as, chantant, *je chantais*; finissant, *je finissais*; recevant, *je recevais*; vendant, *je vendais*.

2. The present of the subjunctive by changing *ant* into *e*: as, chantant, *que je chante*; finissant, *que je finisse*; vendant, *que je vende*.

Exception: In verbs of the third conjugation the termination *evant* is changed into *oive*: as, recevant, *que je reçoive*.

(8.) This formation must not prevent the change of *y* into *i*, according to Rule (2.) § 49.

(9.) The participle past forms all the compound tenses of verbs with the aid of the auxiliaries *avoir* and *être*: as, *j'ai chanté, je suis aimé, j'avais chanté, j'étais aimé*.

§ 61-2. Paradigm of the Unipersonal Verb Y Avoir, To be There.

Indicative Mode.

Present.		Past indefinite.	
Il y a,	*there is; there are*	Il y a eu,	*there has been, there have been*
Imperfect.		**Pluperfect.**	
Il y avait,	*there was; there were*	Il y avait eu,	*there had been*
Past definite.		**Past anterior.**	
Il y eut,	*there was; there were*	Il y eut eu,	*there had been*
Future.		**Future anterior.**	
Il y aura,	*there will be*	Il y aura eu,	*there will have been*

Conditional Mode.

Present.		Past.	
Il y aurait,	*there would be*	Il y aurait eu,	*there would have been*

Imperative Mode.

Qu'il y ait, *Let there be.*

Subjunctive Mode.

Present.		Past.	
Qu'il y ait,	*that there may be*	Qu'il y ait eu,	*that there may have been*
Imperfect.		**Pluperfect.**	
Qu'il y eût,	*that there might be*	Qu'il y eût eu,	*that there might have been*

Infinitive Mode.

Present.		Past.	
Y avoir,	*to be there*	Y avoir eu,	*to have been there*

Participle.

Present.		Compound.	
Y ayant,	*there being*	Y ayant eu,	*there having been*

Past or Passive.

Eu.

LESSONS IN NATURAL HISTORY. No.—XX.

THE ORANG-OUTAN.

This celebrated species of the monkeys of the old world is a native of the islands of Sumatra and Borneo, and of the peninsula of Malacca. Battel, a Portuguese traveller, who resided in Angola, in Western Africa, nearly eighteen years, states that orang-outans are very common in that country. Of these animals he gives the following account. Their bodies were covered, but not very thickly, with a dun-coloured hair, and their legs were without calves. They always walked upright, and generally, when on the ground, carried their hands clasped on the higher part of the neck. They slept in the trees, among which they built a kind of houses, to shelter themselves from the weather. Their food was fruit and nuts, and in no instance were they known to be carnivorous. The inhabitants of Angola, when they travel in the woods, make fires around the places where they sleep, to keep at a distance the various species of voracious animals; at these fires the orang-outans would assemble in the mornings, sitting by them till the last of the embers had expired. He describes them as being so powerful that ten men would not have strength enough to hold one of them; and says that, consequently, the inhabitants are never able catch the old ones alive. Battel, like many in similar circumstances, must have been in some respects inaccurate; as, for instance, when he states, that when any orang-outans die, the rest cover up the bodies with great branches of trees, and that these heaps are frequently found in the forests.

The declaration—often made—that these animals are at least equal in height to man, has not as yet been satisfactorily established. It is opposed to the length of the skeletons and skins which have hitherto reached Europe. The largest preserved specimen with which we are acquainted does not much exceed four feet. The late Dr. Abel described one he had killed, some years ago, to the Asiatic Society at Calcutta, which must have stood when living seven feet high.

The body of the orang-outan is stoutly built, and very muscular; the chest is extremely capacious; and the belly round and protuberant. In early life, the forehead and skull appear well developed, and bear something of a human aspect; but as years advance, the bones of the face expand, and gaining their full dimensions, throw the skull backwards; while positive unlikeness succeeds to this very slight resemblance, in a projecting muzzle, a retreating chin, and lips which are strangely protruded.

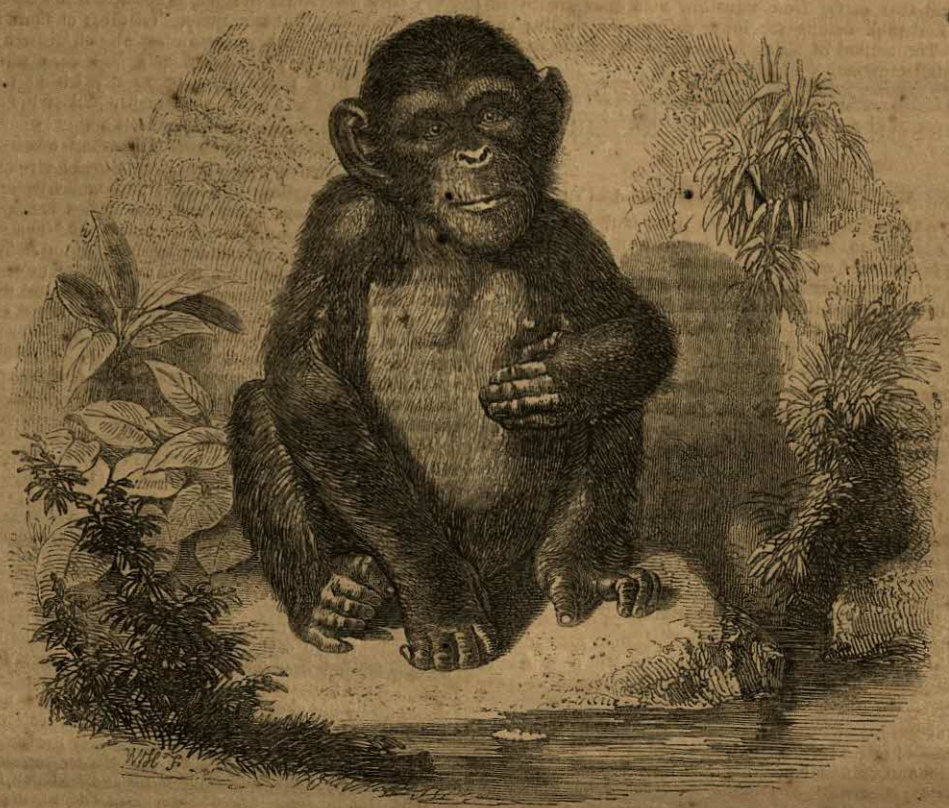
The canine teeth are large and strong, the ears are small, the throat is swollen, the skin there being loose and folded. It is also especially observable that this skin envelopes a double membranous sac, which communicates with the windpipe, and extends even below the collar-bones. Naturalists have not hitherto discovered the use of these sacs, but they well know that when the animal expresses either anger or pleasure these sacs are inflated, at will, to an enormous extent.

The eyes are oval in figure, close, and dark, with large, well defined eye-lids fringed with lashes. The expression of the countenance is grave and melancholy, and accords well with the character of the animal. The orang-outan is free from the restlessness and petulance so commonly discoverable in the monkey tribes.

The arms are of great length, the hands long and narrow, the fingers slender, the thumbs very short. The feet are also long, and resemble hands; the heel projects, the hinder thumb is very short, and in the male animal only it is provided with a small or imperfect nail. The inferior extremities are very short, but they are singularly free in motion, from the hip-joint being so contracted that the head of the thigh-bone rotates at liberty in the socket. In most animals the head of the thigh-bone is tied down to the socket by a very strong ligament, one end of which is fixed on the

top of the ball, the other in the bottom of the cup or hollow. This ligament may be easily observed in the case of animals killed for food, as the ox or the sheep, and we recommend our readers, while the subject is before them, to avail themselves of a nearly opportunity of doing so. It will then be clearly seen that as it must be cut or broken before the bones can be separated, it adds to strength, and prevents dislocation, but it will also be apparent that it proportionately contracts the range of motion. The orang-outan, however, unlike the ox or the sheep, does not walk on the ground, and require to throw the weight of his body in leaping or running on that joint; it needs, on the contrary, the utmost liberty, and therefore the joint is free, and without the ligament. How admirable, then, is the adaptation in this instance to the circumstances of the creature.

The hair of the orang-outan is long, coarse, and of a brownish-red. It covers the body and limbs, but is thinly scattered over the feet and hands; on the fore-arms it is directed upwards. When the animal is young, the hair is sometimes very dark, approaching



THE ORANG-OUTAN.

black, but it seems to become lighter as its age advances. Some parts are naked, as the forehead and face, and the palms of the hands and feet; the skin, when it is exposed, is of a somewhat lead colour.

This animal whom some would regard as little less than man, strangely falls short of the ideal even in its physical structure. The anatomical formation of the monkey tribes refutes the notion that the upright position is natural to them. Though they may be taught, in a state of captivity, to walk like men, it is certain that they usually support themselves by their anterior, as well as their posterior limbs. Nor should it be overlooked that those species which approach the nearest to man rest not on the sole of the foot, but only on its outer side when imitating his position, and that while they take it they are very insecure. And to those which are intermediate between the higher orders of quadrumana and the succeeding orders, the maintenance of an erect position, without support, is absolutely impossible for any length of time.

The idea that the possession of hands, no fewer than four in number, raises the animals thus gifted nearly to the level of humanity, is equally untenable. The hand of the lowest of the quadrumana is but a slight advance on the foot of the carnivora, and even the hand of the highest grade is far inferior to that of man in complexity of structure and variety of movement. The structure of the hands, and especially the thumbs, show them to be fitted for grasping alone, while the great comparative length indicates their utility in climbing, and therefore their fitness for life among the trees.

The points of difference between the human and the monkey races are indeed numerous. In man, the limbs, the principal organs of progression and of maintaining the upright position, are equal in length to the head and trunk together, while the upper extremities are comparatively short. In all the monkeys the lower extremities are comparatively short, while the upper, or arms, are very long, so as to allow the knuckles to be applied to the ground when the animal is really erect. A red orang-outan described by Dr. Abel "performed the progressive motion by placing his bent fists on the ground, and drawing his body between his arms." The *extensors* of the knee are much stronger in the human subject than in any other of the mammalia, as their extending the thigh forwards on the leg is a very essential part in man's mode of progression. The *flexors* of the knee are, on the contrary, stronger in animals, and are inserted so much lower down, even in the monkeys, so as to keep the knee habitually bent, and almost prevent the perfect extension of the leg on the thigh.

The superior maxillary bones in man are united to each other, and contain the whole of the upper teeth; but in monkeys, as well as in most other animals, they are separated by a third bone of a wedge shape, which contains the incisor teeth. As Lawrence justly says: "The brute face is merely an instrument, adapted to procure and prepare food, and often a weapon of offence and defence. The human countenance is an organ of expression, an outward index of what passes in the busy world within. In the animal, the elongated and narrow jaws, with their muscles, with their sharp cutting

teeth, or strong pointed and formidable fangs, compose the face; the chin, lips, cheeks, eyebrows, and forehead, are either removed or reduced to a size and form simply necessary for animal purposes; the nose is confounded with the upper jaw and lip, or, if more developed, is still applied to offices connected with procuring food." In fact, we have in all such instances, the muzzle or snout of an animal, not "the human face divine."

The articulation of the head with the spine, which determines its support, is in man very near the centre; the vertical line of the neck and the trunk is nearly perpendicular, and would pass through the top of the head; and consequently the whole weight is sustained by the vertebral column. In most animals the great occipital hole, and the accompanying parts, are placed almost at the end of the skull, throwing the whole weight of the head forwards, and it is incapable of being supported by the vertebral column, without the aid of some very powerful machinery.

The most wonderful of "the wild men of the woods" have no power of speech. On a careful examination of their habits and actions, we find that so far from equalling man, they are by no means in the first rank among the lower animals for docility and intelligence. The actions of a dog or an elephant are, in reality, much more intellectual and wonderful.

LESSONS IN LATIN.—No. LIII.

By John R. Beard, D.D.

VERBS WHICH GOVERN THE ABLATIVE.

As the idea conveyed by the accusative case is that of motion towards an object, so the ablative denotes motion from an object, and generally answers to the question, whence? But the question, whence? may involve the source or cause, so that the ablative is the case of the cause or instrument. Hence the relations expressed by our prepositions *from*, *by*, *with* (and other relations), are contained in the ablative. But to speak in detail.

As the fundamental idea of the ablative is that which is conveyed by our *out of*, or *from*, so the ablative is used in Latin after verbs of motion in names of cities, small islands, peninsulas; as also in domus, rus, and humus, e. g.,

Dionysius Platonem *Athenis* arcessivit.
Dionysius invited Plato from Athens.

Observe that no preposition is employed. Had it been said that Plato was invited to Athens, the accusative would have been used.

It may be convenient to put together here the rules relating to names of place. The idea of place implies the relation where? whither? and whence? A man may be at or in a place, hence the question where? where is he? A man may go to a place;—whither? A man may come from a place;—whence? The following, then, are the rules,—first without a preposition:—

i. The question *where?* requires
   a. Names of cities in the singular number of the first and the second declension, to be *in the genitive*; as, Romae, *at Rome*; Corinthi, *at Corinth*;
   b. but all others *in the ablative*, as, Athenis, *at Athens*.
ii. The question whither? requires the accusative constantly; as, Romam, *to Rome*; Sardes, *to Sardis*; Lacedaemonem, *to Lacedemon*.
iii. The question whence? requires the ablative constantly; as, Româ, *from Rome*; Corintho, *from Corinth*; Athenis, *from Athens*.

The names of the smaller islands and peninsulas are constructed in the same way as the names of cities; only the term "smaller islands" is not to be taken too strictly. But seldom do we find these constructions with names of parts of cities, entire lands, or large islands; which, in general, are connected with prepositions.

Domus and rus, in the relations implied by all the three questions, are constructed according to the analogy of names of cities or towns; thus, domi, is *at home*, domum, *home*, as *he goes home*; domo, *from home*. In the same way, ruri is *in the country*; rus, *into the country*; rure, *from the country*. By the same analogy, humi means *on the ground*; belli domique, *in war (abroad) and at home*, or, as we say, *at home and abroad*; sometimes the phrase stands thus: domi bellique; also domi militiaeque; belli and militiae are separately found without domi.

Secondly, prepositions are employed with names of places in these instances:—

i. When an appellative or general noun, such as urbs, oppidum, locus, is added; as, *ex* oppido Gergoviâ, *from the town Gergovia*. A noun in apposition to the genitive of place, stands either with or, what is more common, without *in*.
ii. If the direction whence and whither is put in strong contrast: as, usque *a* Dianio *ad* Sinopem navigarunt, *they sailed all the way from Dianium to Sinopé*.
iii. When only a part of a city or its suburbs are meant; as, Libo discessit a Brundisio, *Libo departed from the port of Brundisium*.
iv. When origin in a place is denoted; in which case, ab is used with the ablative; as, Volsci obsides dant trecentos principum *a Corâ* atque *Pometiâ* liberos, that is, *natives of Cora*, &c. With domus; prepositions are used when not the home, but the house, building, or family is meant; as, *in domo* furtum factum est ab eo qui *domi* fuit, *in the house a robbery was committed by him who was at home*.

As place, or a point in space, so a point of time, or time when considered as a point, requires the ablative, e. g.,

Time when: Color lusciniarum *autumno* mutatur.
The colour of nightingales changes in autumn.

From the ablative of place arises the ablative of the cause out of which anything springs. The ablative of the cause occurs in connexion with verbs and adjectives, pointing out the source, the means, the instrument, and even the manner in or by which a thing takes place or an action is done. In general, this is called "the ablative of the cause, manner, and instrument;" by which you are to understand that a noun, expressive of either the cause, the manner, or the instrument, is put in the ablative case, e. g.,

Cause: Darius *senectute* diem obiit supremum.
Darius came to his end by reason of old age.
Manner. Injuria fit *duobus modis*, aut *vi* aut *fraude*.
An injury is done in two ways, either by force or fraud.
Instrument: Ferae domantur *fame* atque *verberibus*.
Wild beasts are tamed by hunger and stripes.

An accompanying circumstance is also put in the ablative. This usage is very similar to the ablative of manner, e. g.,

Id *aequo animo* non feret civitas.
The city will not bear that patiently.

The quality of an object is, moreover, put in the ablative. This is called the ablative of quality, e. g.,

Quality. Legiones sunt *alacri animo*.
The legions are of lively spirits.

With the ablative of quality, the genitive of quality is nearly related; but the latter seems to denote what is essential, the former what is accidental,—the latter internal, the former external qualities. The distinction, however, is not always traceable.

Especially is the ablative of the means required by these verbs and adjectives, namely, to gift with, to supply with, to present, load, &c.; as, donare, instruere, ornare, juvare, praeditus, onustus, &c., e. g.,

Means: Onerare naves *commeatu*, *stipendio*, *armis*.
To load the vessels with provisions, pay, arms.

There is also the ablative of price employed with verbs denoting to buy or sell, when the exact sum paid is mentioned, e. g.,

Price. *Viginti talentis* unam orationem Isocrates vendidit.
Isocrates sold one oration for twenty talents.

The price, also, when in a figurative sense, is put in the ablative, e. g.,

Multo sanguine Poenis victoria stetit.
The victory cost the Carthaginians much blood.

The deponents fruor, fungor, potior, and vescor, together with their compounds, require their object in the ablative case, e. g.,

Sapiens *ratione* optime utitur.
The wise man employs reason in the best manner.

Also, the adjectives dignus and indignus take the ablative, e. g.,

Virtus *imitatione* non *invidiâ* digna est.
Virtue is worthy of imitation, not of envy.

The ablative absolute has already been explained. But observe, the ablative absolute is an abbreviated sentence. Being an abbreviated sentence, it has a subject of its own. Consequently, its subject is different from the subject of the complete sentence of which it forms a part. There must, then, in this construction, be two subjects, that of the ablative absolute, and that of the full sentence. To exemplify these remarks, you may say, with both sentences complete—

	1st Sentence.	2nd Sentence.
Full Construction:	Romae reges exacti sunt,	et consules creati sunt, or,
	One Sentence.	
Ablative Absolute:	Romae, regibus exactis,	consules creati sunt.

Here you see that the ablative absolute holds the place of the first sentence, and is that sentence in an abbreviated form. You also see that the ablative absolute construction involves two subjects; here, for instance, regibus and consules. Consequently, there cannot be an ablative absolute construction without two subjects. The force of the ablative absolute may be illustrated by putting the construction in juxtaposition with a dissimilar construction, the sense being in both the same. This we can do, by reporting first in the words of Livy, and then in those of Cicero, the statement that Solon and Pisistratus flourished (at Athens) in the reign of the Roman king Servius Tullius:—

Livy: Solon et Pisistratus viguerunt *dum Servius Tullius regnat.*
Cicero: Solon et Pisistratus, *Servio Tullio regnante*, viguerunt.

The last example may throw light on the meaning of the term, ablative absolute (absolvo, *I set free*), or independent ablative, for the phrase Servio Tullio regnante, so far as construction goes, stands, you see, apart from the other words, and may indeed be taken away, so free and independent is it of the rest of the sentence.

In general, for this construction you must have a noun and a participle. The participle is, however, sometimes omitted, e. g.,

Naturâ *duce* errari nullo pacto potest.
With nature for our guide, we can in no way err.

Adjectives are also found in a similar manner, e. g.,

Caesare *ignaro* magister equitum constitutus est.
A master of the horse was appointed without Caesar's knowing it.

The ablative absolute is a construction peculiar to the Roman authors; it is also very often used, at least by the Roman prose authors; not inappropriately, therefore, might it be called *the Latin construction.*

Vocabulary.

Conon, ónis, m. *Conon*; Cyprus, i, f. *the island Cyprus*; Iphicratés, is, m.; Timotheus, i, m.; Lesbos, i, m.; Chersonesus, i, f.; Caesar, Caesăris, m.; Corinthus, i, m.; Athenae, arum, f.; Pericles, is, m.; Mediolanum, i, n. *Milan*; Delphi, orum, m. *Delphi*; Apollo, ĭnis, m.; cultio, ónis, f. *cultivation, tillage*; instructus, a, um, *furnished with*; onustus, a, um, *loaded with*; praeditus, a, um, *endowed with*; Helótae, arum, m. *the Spartan slaves so called*; Numidae, arum, m. *the Numidians or Africans*; plerumque, *for the most part*; proboscis, ĭdis, f. *the elephant's trunk*; locusta, ae, f. *a locust*; Alpes, ium, f. *the Alps*; excelsus, a, um, *tall, lofty*; teres, teretis, *smooth, well-formed*; vegetus, a, ŭm, *quick, lively, sparkling*; vitrum, i, *woad, a herb for dying a blue colour*; capellus, i, m. *the hair*; promissus, a, um, *hanging down, long*; rasus (rado), *scraped, shaved*; labrum, i, n. *a lip*; venalis, e, *on sale, purchasable* (*E. R. venal*); Thebae, arum, f. *Thebes*; Athenae, arum, f. *Athens*; Agamemnon, ŏnis, m.; Syracusae, arum, f. *Syracuse*; Aulis, Aulidis, f.; infestus, a, um, *hostile*; conducit, imp. *it is advantageous*; plecto, 3. *I strike, punish*; oblecto, 1. *I delight in*; eximius, a, um, *distinguished, remarkable*; pulchritudo, ĭnis, f. *beauty*; horridus, a, um, *rough, frightful*; sapio, 3. *I am wise*; inficio, *I colour, stain.*

Exercises.—Latin-English.

Conon plurimum Cypri vixit, Iphicrates in Thraciâ, Timotheus Lesbi; septimum jam diem Corcyrae tenebamur; Miltiades Chersonesi habuit; Galli domos abierant; magnae res temporibus illis belli gerebantur; domi suae M. Drusus occisus est; haec eadem locutus sum domi meae; aurum atque argentum domum regiam comportant; alius alium domos suas invitant; domi alienae mihi haud bene est; domi Caesaris nulli sunt amici; domi illius conveniunt complures; et Corintho et Athenis et Lacedemone nuntiata est victoria; translatus est ex Apolloniâ, Ponti urbe; ad Cirtam oppidum venerunt Romani; in oppido Citio sunt advenae · Archias Antiochiae natus est, celebri quondam urbe; milites Albae constituerunt, in urbe munitâ, propinquâ; quum iter ad Mutinam dirigerem; erat a Gergoviâ despectus in Castra; ab Athenis proficisci in animo habebam; legati ab Ardeâ Romam venerunt; navis in Cajetâ est parata nobis; Socrates philosophiam in domos etiam introduxit; Antonius impuritates pudicâ in domo suscepit; vigebat in illâ domo disciplina; Alcibiades educatus est in domo Periclis; is in domo suâ facere mysteria dicebatur; in sua rura venerunt; Pompeius a Caesare victus Alexandriam properavit; imperator Gallienus Mediolani occisus est; Caius Marius sese Praeneste contulit; multi homines clari Rhodum profecti esse dicuntur; Romani domi forisque fortes erant; Delphis clarissimum Apollŏnis erat fanum; quare et reges et populi legatos mittere solebant Delphos, aut oracula Delphis petere; Romani legatos miserunt Athenas; Demaratus Corintho Tarquinios Etruriae fugerat (from Corinth to Tarquinii in Etruria); multis in rebus negligentiâ plectimur; in culpa sunt qui officia deserunt militiâ animi; peto a te ne me putes oblivione tui rarius ad te scribere quam solebam, sed gravitate valetudinis; cura incesserat Patres ne metu irâque plebs tribunos militum ex plebe crearet; nimio gaudio paene desipiebam; gubernatoris ars utilitate laudatur; delicto dolere, correctione gaudere oportet; nullâ re tam laetari soleo quam meorum officiorum conscientiâ; laetus sorte tuâ, vives sapienter; Campani semper fuerunt superbi bonitate agrorum; Graecia quondam opibus, imperio, gloriâ floruit; duobus vitiis, avaritiâ et luxuriâ, Romana civitas laborabat; cornibus tauri, apri dentibus, morsu leones se tutantur; Lycurgus leges suas auctoritate Apollĭnis Delphici confirmavit; Atticus Athenienses universos frumento donavit; muneribus deorum sumus instructi atque ornati; senatûs officium est consilio civitatem juvare; senes multi se agri cultione oblectarunt; onusti cibo et vino per quietem per turbata et confusa cernimus; Varus, homo est summa religione et summâ auctoritate praeditus; id est cujusque proprium quo quisque fruitur atque utitur; Helótae apud Lacedemonios servorum munere fungebantur; totius Galliae imperio potitus est Caesar; Numidae plerumque lacte et ferinâ carne vescebantur; crocodilus pelle durissimâ contra omnes ictus munitur; elephanti spirant, bibunt, odorantur proboscide; populi quidam vescuntur locustis; dentes usu atteruntur sed igne non cremantur; silentio copias castris eduxit; Miltiades summâ aequitate res restituit Chersonesi; deos semper puâ, integrâ, incorruptâ et mente et voce veneremur; Alpium saltus haud sine clade superatus est; classem Dolabellam ea mente comparavit ut Italiam peteret; hoc bonâ tuâ veniâ dixerim; sidera cursus suos conficiunt maximâ celeritate; Iphicrates fuit animo magno; Caesar fuisse traditur excelsâ staturâ, colore candido, teretibus membris, ore paullo pleniore, nigris vegetisque oculis, valetudine prospera; omnes Britanni se vitro inficiunt, atque hoc horridiore sunt in pugnâ aspectu, capilloque sunt promisso, atque omni parte corporis rasâ praeter caput et labrum superius; Cato in omnibus rebus singulari fuit prudentiâ et industriâ; Dionysius ad mensam eximiâ formâ pueros jussit consistere; Caesar Valerium Procillum, summâ virtute et humanitate adolescentem, ad Ariovistum misit; erat inter Labienum atque hostem difficili transitu flumen, ripisque praeruptis; Chrysogonus vas Corinthium magno pretio mercatus est; milites Caesar docet quanto detrimento necesse sit constare victoriam; victi pacem ingenti pecuniâ emerunt; tranquillitas animi neque auro neque gemmis est venalis; Carthagine olim pueri diis immolabantur; Alexander Babylone mortuus est; Thebis Pindarus floruit, Syracusis Theocritus; hieme ursi in antris dormiunt; nemo mortalium omnibus horis sapit; Aulide Iphigenia, Agamemnonis filia, caesa est; Dione Syracusis interfecto; Dionysius rursus Syracusarum potitus est; maximas virtutes jacere omnes necesse est, voluptate dominando; perditis rebus omnibus, tamen ipsa virtus se sustentare potest; Deo teste, promisit multa; in bello civili nihil accidit, non praedicente me; deserere Rheni ripam, irrupturis jam infestis nationibus, non conducit.

English-Latin.

My sister lived at Athens; thy brother went to Athens; the consul came from Athens; the ambassador will come from France to England; is thy mother at home? she will be home at four o'clock (the fourth hour); the queen is gone to Corinth; in the queen's house is very much silver and gold; I am going into the country; my father is in the country; when will thy sister come from the country? the English are brave at home and abroad; he is punished for (by) his negligence; the young men will desert their duty through the love of pleasure; tribunes of the people have been created in consequence of (by) fear and anger; art thou joyful at thy lot? they are loaded with benefits; the boys are furnished (supplied) with books; women defend themselves with their tongues; my father has gifted me with (given me) a thousand books; the young delight in play; they worshipped God with a pure mind; he is a man of lofty stature; thy sister has (is of) remarkable beauty; the ancient Britons are said to have had (been of) a frightful aspect; Caesar was a general of the highest

valour; the river is difficult to pass over (of difficult passage); this house is not to be bought for (by) gold; the poems of Homer are not purchasable for gems; in summer birds sing and boys play; the general being slain, his soldiers fled; the sun arising, the night passes away; the wise are not always wise (sapio).

LESSONS IN GERMAN.—No. L.

§ 6. Gender.

(1) Strictly speaking, the masculine gender belongs exclusively to words denoting males; the feminine to those denoting females; and the neuter to such only as, are neither male, nor female. And in English, accordingly, with very little exception, this is found to be actually the case.

(2) Not so, however, in German; for there the names of many things *without* life, from their real, or supposed possession of *qualities* pertaining to things *with* life, are considered and treated as masculine, or feminine. Often, moreover, words indicating things without life, are deemed masculine or feminine merely from some resemblance in *form* to those designating things properly male or female. Hence arises, in Grammar, the distinction between the *natural* and the *grammatical* gender of words.

(3) Were the natural gender alone regarded, it would be necessary only to know the MEANING of a word, to know its gender; but since this is not the case, we are often obliged to determine gender chiefly by the FORM. We give below, therefore, the principal Rules for determining the gender in either way: suggesting only, as the best mode of learning the *exceptions* (which are numerous and here purposely omitted,) the custom of constantly and carefully noting them in reading and speaking.

§ 7. Rules for determining gender,

by the MEANING;

(1) To the MASCULINE belong names of
- male beings; as, der Mann, the man; der Löwe, the lion.
- days; as, der Montag, Monday; der Dienstag, Tuesday.
- months; as, der Januar, January; der Februar, February.
- seasons; as, der Frühling, spring; der Sommer, summer.
- winds; as, der Nordwind, the North wind; der Südwind, the South wind.
- points of the compass; as, der Nord, the North; der Süd, the South.
- mountains; as, der Harz, the Harz; der Atlas, the Atlas.
- stones; as, der Diamant, the diamond; der Rubin, the ruby.
- *fruit*-trees; as, der Birnbaum, the pear-tree; der Apfelbaum, the apple-tree.

(2) To the FEMININE belong the names of
- female beings; as, die Frau, the wife; die Tochter, the daughter.
- rivers; as, die Weser, the Weser; die Temse, the Thames.
- fruits; as, die Birne, the pear; die Nuß, the nut.
- trees, plants and flowers; as, die Birke, the birch; die Erle, the alder.

(3) To the NEUTER belong the names of
- places; as, Berlin, Berlin
- metals; as, das Silber, silver.
- materials; as, das Holz, wood.
- letters; as, das A, the A; das B, the B, &c.
- infinitives used as nouns; as, das Leben, life; das Reiten, riding.
- many individuals taken together; (i. e. *collective* nouns;) as, das Heer, the host.
- adjectives used as nouns; (in an abstract, and indefinite way;) as, das Gute, the good; das Schöne, the beautiful.

by the FORM.

(1) To the MASCULINE belong

a. Those primary derivatives (See § 2. 3.) ending in the *insignificant* suffixes er, el, en; and those also that are without affixes of any kind.

b. Those secondary derivatives formed by means of the *significant* suffixes, er, el, en, ing, and ling.

(2) To the FEMININE belong

a. Those primary derivatives ending in e, be, te, or ft.

b. Those secondary derivatives formed by means of the suffixes e, ei, in, heit, keit, ſchaft, ung.

(3) To the NEUTER belong

a. Those secondary derivatives formed by means of the suffixes, chen, lein, ſal, ſel niß, thum.

b. Those nouns having the augment ge.

Under the name of *male beings* must be included that of the Almighty as also those of angels and other superior powers; those of mythological deities and of human beings; those of beasts, birds, reptiles, and fishes. The term *female beings* must have a like latitude of signification.

§ 8. Gender of compounds and foreign words.

(1) Compounds in general adopt the gender of their last component: as,

die Hofkirche, (from Hof, court, or yard, and Kirche, church;) court church;
der Kirchhof, the church yard;
der Eichbaum, (from die Eiche, the oak, and der Baum, tree;) the oak-tree;
die Windmühle, (from der Wind, the wind, and die Mühle, mill;) the windmill;
das Rathhaus, (from der Rath, council, and das Haus, house;) the council-house.

(2) Foreign words, for the most part, when taken into the German language, retain their original gender. Those however, that have become fairly *Germanized*, often take a different gender, as they take a different form; thus, *Corpus*, (the body,) which, in Latin, is *neuter*, becomes, in German, der Körper, which is *masculine*.

§ 9. Derivation of nouns.

(1) To what has been already said (§ 2. (3).) concerning the derivation of nouns, we add here, before entering upon the subject of Declension, a brief view of the *secondary derivatives*, which are made by *significant* suffixes. For the sake of the learner we subjoin a list of the leading suffixes of this class: putting in brackets the equivalent *English* terminations, explaining severally their force and use, and illustrating the whole by suitable examples.

§ 10. Suffixes used in forming nouns.

Suffixes.	*English* equivalents.	Meaning.
er	[*er, ier, or yer, zen*;]	designates (*male*) *persons*; also, *agents* or *instruments*.
ing, or ling	[*ling, aster*;]	denotes (often *contemptuously*) *persons, animals and things*.
in or inn	[*ess, ix*;]	designates (*female*) *persons*.
ei	[*y, ry, ery, ory, cry, ory*;]	indicates the *act, practice*, or *place of business*.
ung	[*ing, ion, ion*;]	signifies the *act* or the *continuing to act*.
e heit keit	[*ness, ity, th*;] [*ness, ity, th*;] [*ness, ity, th*;]	denote *qualities*, or *attributes*;
ſchaft	[*ship, hood, ity*;]	express *rank, grade, office*;
thum	[*dom, hood, ity*;]	also, a *number* of *things taken collectively*; often, merely the *quality*.
ſal ſel	[*ude, cy*;] [*ude, cy*;]	denote the *state* or *condition*; also the *quality*; sometimes the *result*.
niß	[*ness, cy*;]	
chen lein	[*kin, ule, et, let*;] [*kin, ule, et, let*;]	indicate *diminutiveness*.

§ 11. Examples.

SUFFIXES.	NOUNS.	
er	Sänger,	a singer;
	Bürger,	a citizen;
	Säger,	a sawyer;
	Schneider,	a tailor;
	Römer,	a Roman;
	Leipziger,	a resident of Leipzig.
	Wiener,	a Viennese;
ling	Häuptling,	a captain;
	Flüchtling,	a fugitive;
	Miethling,	a hireling;
	Dichterling,	a poetaster;
	Hänfling,	a linnet;
	Schößling,	a shoot, or sprig;
in or inn	Gräfin,	a countess;
	Heldin,	a heroine;
	Königin,	a queen;
	Professorin,	a professor's wife;
	Löwin,	a lioness;
ei	Dieberei,	thievery;
	Heuchelei,	hypocrisy;
	Fischerei,	fishery;
	Brauerei,	brewery;
ung	Belehrung,	teaching, i. e. the *act* of teaching;
	Erbauung,	the building, or erecting;
	Krönung,	the crowning, or coronation;
	Sitzung,	the sitting, or session;
e	Güte,	goodness;
	Stärke,	strength;
heit	Krankheit,	sickness;
	Dummheit	stupidity;
keit	Heiligkeit,	holiness;
	Feuchtigkeit,	humidity;
schaft	Freundschaft,	friendship;
	Priesterschaft,	priesthood, that is, the *body* of the priests;
thum	Bereitschaft,	readiness;
	Heidenthum,	heathendom; heathenism;
	Christenthum,	Christendom; Christianity;
	Eigenthum,	property;
sal	Mühsal,	the *state* of being in trouble; distress;
sel	Häckſel,	that which has *resulted* from hacking and cutting; i. e. cuttings;
niß	Bedürfniß,	the *state* of being in want; necessity;
	Gleichniß,	*quality* or *state* of being like; likeness;
lein	Büchlein,	a *little* book;
	Knäblein,	a *little* boy;
chen	Stühlchen,	a *little* stool;
	Eichen,	a *little* egg.

Appellatives derived from the names of people often have the termination e: as, der Hesse, the Hessian; der Türke, the Turk; &c.

Nouns derived from the name of a city or town, are often used indeclinably as adjectives. Ex.: Das Leipziger Bier, the Leipzic beer; Gen. Des Leipziger Biers, of the Leipzic beer.

(8) It must be observed, in forming derivatives of the order illustrated above, that when a, o, or u, is contained in the radical part, it is modified into ä, ö, or ü, upon receiving any one of the suffixes er, ling, in, chen, lein, e, niß, and sel; as, in the case of Länger, (from Lang,) Bürger, (from Burg,) and others of the like kind.

(2) Often, moreover, in forming secondary derivatives certain *euphonic* letters are inserted between the suffix and the word to which it is added; as, ig in Feuchtigkeit, humidity. Other letters employed in this way, are en, n, and t. These euphonic parts are easily distinguished from those having an influence on the meaning, by merely resolving the derivative into its elements.

(3) Here, too, may be noted the particle ge, which being prefixed to certain primary words, form a class of nouns denoting either *frequency* of action, or a *collection* of things. These words, also, most commonly suffix the letter e; as, Gerede, constant talk; Geheul, frequent crying; Gebirge, a range of hills, &c.

LESSONS IN ARITHMETIC.—No. XXVI.

VULGAR FRACTIONS.

The following are the answers to the exercises given in our last lesson:—

EXERCISES TO PROBLEM XI.

Rule 2.—Answers: (1.) $\frac{1}{18}$; (2.) $\frac{1}{21}$; (3.) $\frac{5}{117}$; (4.) $\frac{1}{18}$; (5.) $\frac{3}{125}$; (6.) $\frac{5}{1600}$.

Rule 3.—Answers: (1.) $13\frac{5}{7}$; (2.) 344; (3.) 2000; (4.) 3200; (5.) 100; (6.) 100.

Rule 4.—Answers: (1.) $14\frac{14}{15}$: (2.) $17\frac{1}{15}$; (3.) $666\frac{2}{3}$; (4.) $\frac{2200}{2201}$; (5.) $\frac{5}{7}$; (6.) $\frac{4}{1001}$.

Rule 5.—Answers: (1.) $2\frac{11}{21}$; (2.) $8\frac{35}{96}$; (3.) $1556\frac{1}{2}$; (4.) $42713\frac{1867}{1904}$; (5.) $55\frac{23}{24}$; (6.) $\frac{1}{880}$.

Rule 6.—Answers: (1.) $1\frac{13}{32}$; (2.) $5\frac{122}{685}$; (3.) $7\frac{721}{1035}$; (4.) $168\frac{6}{119}$; (5.) $96\frac{26}{31}$; (6.) $\frac{22}{41}$.

In the answers at p. 74, col. 2, line 11 from bottom, for (3.) $1\frac{5}{42}$ read (3.) $1\frac{161}{205}$.

WEIGHTS AND MEASURES.

1. Our students having studied numbers in the *abstract*, it is now necessary to call their attention to the study of numbers in the *concrete*. Numbers are said to be *abstract* when no particular name is applied to them, as pounds, yards, hundred-weights, &c.; and *concrete* when such names are applied to them; and especially when the subdivisions of the standard of concreteness come into play. For example, when we speak of a sum of money, such as 5 pounds, 7 shillings, and 6 pence, the standard of concreteness here is the *pound sterling*, and its subdivisions are *shillings, pence, and farthings*. In like manner, when we speak of the weight of a package of goods, such as 5 hundred-weights, 2 quarters, and 7 pounds (*weight*), the standard of concreteness here is the *hundred-weight*, and its subdivision are *quarters, pounds, ounces*, &c.

In proceeding to explain the nature of the moneys, weights, and measures of this country, it will be necessary to refer to some recent acts of Parliament, by which some important changes were effected in these matters—changes which we are now becoming somewhat more accustomed to, but which occasioned a good deal of trouble, and even disturbance, when they were first made imperative on the natives of the British empire. In an article written by us for the "Companion to the British Almanac for 1828," we gave some account of the acts of Parliament to which we have referred, and of the changes which would be produced by their introduction. The following is a modified retrospect of that article, and it will be as useful to our readers now as it was to the public then; for no alterations have yet been made upon the practical bearing of these acts, although we shall see in the sequel that some have been proposed.

An act of Parliament was passed on the 17th of June, 1824, (cap 74. Geo. IV). entitled, "an act for ascertaining and establishing uniformity of weights and measures," which was partially amended by clause (A) of an act to prolong the time of the commencement of that act to January, 1826.

In the first and second clauses of this act it is enacted, that the old standard yard of 1760, in the custody of the clerk of the House of Commons, shall continue to be the standard unit of extension or lineal, superficial, and solid measures, when the temperature is at 62° of Fahrenheit's thermometer. From this it is evident that no change is to be made upon these measures throughout the empire, and that all the measurements depending upon them are to remain the same as before. In various parts of the empire, however, very considerable changes were required to take place, especially in the measurement of land. For instance, this act of course abolished the use of the Scotch ell and of the Scotch and Irish acres.

In the third clause it is enacted, that if the standard yard should be lost or injured, it is to be restored by a reference to the length of the pendulum, vibrating seconds in the latitude of London, at the level of the sea, and in vacuo. This length has been found, and is by the act declared to be 39.1393 inches. Hence the length of the yard to that of the pendulum is in the proportion of 36 inches to 39.1393 inches, or of the number 360,000 to the number 391,393; so that if the length of the pendulum be divided into 391,393 equal parts, then will 10,000 of these parts be the length of an inch, and 360,000 of the same parts the length of a yard, according to the imperial standard.

In the fourth clause it is enacted, that the old Troy pound, of

1758, in the custody of the clerk of the House of Commons, shall continue to be the standard unit of weight; and that the Avoirdupois pound now in use shall contain 7,000 grains, of which the Troy pound contains 5,760, according to this act. Hence, contrary to the opinion of many writers, the weight of the Troy or standard pound to that of the Avoirdupois or common pound, is in the proportion of 5,760 grains to 7,000 grains; or of the number 144 to the number 175. In this case, also, no changes were required to take place in the transactions of business where such weights were used formerly; but throughout the whole empire changes of weights were required to occur in the sale of many articles of ordinary consumption. These changes were not only different in almost every county, but even sometimes different in various parts of the same county. The use of all local pound weights and stone weights, which varied with the locality, was utterly abolished, and all local enactments regarding them rendered nugatory.

In the sixth clause it is enacted, that if the standard Troy pound should be lost or destroyed, it is to be restored by a reference to the weight of a cubic inch of distilled water, which has been found, and is declared to be 252.458 Troy grains, at the temperature of 62° Fahrenheit, the barometer being at 30 inches. Hence the weight of a pennyweight Troy is to that of a cubic inch of distilled water, in such circumstances, in the proportion of 24 grains to 252.458 grains, or of the number 24,000 to the number 252,458; so that the weight of the cubic inch of water must be divided into 252,458 equal parts, and 24,000 of them will be the standard pennyweight, from which the ounce and the pound, with its multiples, can be easily derived.

In the sixth clause it is enacted, that the *new* standard measure of capacity for all liquids, and dry goods not measured by heaping, shall be a gallon containing 10 pounds Avoirdupois weight of distilled water weighed in air at the temperature of 60° Fahrenheit's thermometer, the barometer being at 30 inches; that the quart shall be the fourth part of this imperial standard gallon, and the pint one-eighth; that two such gallons shall be a peck, and eight shall be a bushel; and that eight such bushels shall be a quarter of corn, or other dry goods, not measured by heaped measure. To find the capacity of this new gallon, it is necessary to refer to the fifth clause of the act, where we have the standard weight of a cubic inch of water given in grains; hence we find the number of cubic inches in the gallon by the following proportion: As 252.458 grains : 1 cubic inch : : 10lbs. or 70,000 grains : 277.274 cubic inches, which is consequently the content of the Imperial standard gallon. Though the identification of this gallon is thus remotely connected with the standard of length, and still more so with the length of the pendulum, yet it may be proper here to point out a mode of verifying it, and restoring it, if ever the standards of weight or measure should be lost or destroyed. *The content of the cube of the sixth part of the length of the pendulum vibrating seconds in the latitude of London at the level of the sea and in a vacuum, is so very near that of the imperial standard gallon, that the difference is only about $\frac{3}{10}$ of a cubic inch.* For, one-sixth part of the length of the pendulum is 6.5232166 inches; and the cube of this is nearly 277.578 cubic inches, which differs from the contents of the gallon only by .304 of a cubic inch. Now this difference is so small, that the one may be reckoned a sufficient identification of the other—a circumstance which brings this gallon nearer to a fixed and invariable standard than perhaps was ever thought of. Another circumstance of considerable importance may be remarked, as it serves to render the standard of weight, determined by water, independent of thermometric graduations. *The temperature* (62° Fahrenheit's thermometer) *at which the water has been fixed for the determination of the standards of weight and measure, is one which is situated above the freezing point, at exactly the sixth part of the distance between the freezing and the boiling points.* The connexion of these two facts, therefore, rendered the standards of weight and of measure invariable in future, inasmuch as they are independent of artificial measurements and graduations, and can be easily referred to nature for their prototypes: 1. That the cube of the sixth part of the second's pendulum at London is so near the capacity of the imperial standard gallon as to be considered an identification; and, 2. That the tenth part of the weight of an imperial standard gallon of water, at a temperature above that of freezing (in the mercurial thermometer), which is exactly the sixth part of the distance between the freezing and boiling points, is an imperial standard Avoirdupois pound.

The changes which this alteration in the standard of capacity produced was very great. By this clause, the old standard wine gallon of 231 cubic inches, the old standard ale and beer gallon of 282 cubic inches, the old standard corn gallon of 268.8 cubic inches, the standard Winchester bushel of 2150.42 cubic inches, the old standard Scotch pint of 103.404 cubic inches, and the old standard Scotch measures of corn, the wheat and barley firlots, with all other local measures of every description, were completely abolished.

In the seventh clause it is enacted, that the standard measure of capacity for goods sold by heaped measure, shall be the bushel, containing 8 imperial gallons, or 80 Avoirdupois pounds, of water at the above-mentioned temperature; and that it shall be made round, with a plain and even bottom, and be 19½ inches from outside to outside. In the eighth clause it is further enacted, that in using this bushel, it shall be heaped, in the form of a cone, to the height of six inches, and the outside of the bushel is to be the extremity of the base of this cone. In the clause appended to the act, it is enacted, that all such measures shall be made cylindrical, and that their diameters shall be at the least double their depths, and the height of the cone or heap shall be equal to $\frac{3}{4}$ of the depth of each measure, its outside being the extremity or base of the cone. On these principles, the standard weights and measures of Great Britain are the following:—

I. LONG MEASURE.

STANDARD.—The length of the pendulum vibrating seconds of mean time in the latitude of London at 62° of Fahrenheit's thermometer, and in a vacuum at the level of the sea, is equal to 39·1393 inches of the brass "Standard Yard of 1760," or "Imperial Standard Yard."

			endulums.
$\frac{10000}{391393}$ths of the pendulum	= 1 inch	=	·025550
12 inches	= 1 foot	=	·306597
3 feet	= 1 yard	=	·919792
5½ yards	= 1 pole or perch	=	5·058854
40 poles or 220 yards	= 1 furlong	=	202·354156
8 furlongs or 1760 yards	= 1 mile	=	1618·833244

N.B.—The English land chain = 22 yards or 66 feet, and contains 100 links; 1 link = 7·92 inches.

II. SQUARE OR SUPERFICIAL MEASURE.

STANDARD.—The same as in long measure.

			Square Pendulums.
$\frac{10000}{153184849}$ths of the sq. pendulum	= 1 square inch	=	·000653
144 square inches	= 1 square foot	=	·094002
9 square feet	= 1 square yard	=	·846017
30¼ square yards	= 1 square pole	=	25·592003
40 sq. poles or 1210 sq. yds.	= 1 rood of land	=	1023·680107
4 roods or 4840 square yards	= 1 acre of land	=	4094·720426

N.B.—The square chain = 484 square yards, and 10 square chains = 1 acre.

III. CUBIC OR SOLID MEASURE.

STANDARD.—The same as in long measure.

			Cubic Pendulums.
$\frac{10000}{59994688}$ths of the cubic pendulum	= 1 cubic inch	=	·0000176
1728 cubic inches	= 1 cubic foot	=	·0288207
27 cubic feet	= 1 cubic yd.	=	·7781587

N.B.—A cubic foot of distilled water at 62° Fahrenheit, weighs almost *exactly* 997·136969 ounces Avoirdupois, and at the maximum density 999·2777 ounces Avoirdupois.

IV. TROY WEIGHT.

STANDARD.—One cubic inch of distilled water at 62° Fahrenheit's thermometer, the barometer being at 30 inches, weighs 252·458 *troy grains*. One pound = 5760 grains.

			Weight in Cubic inches of water at 62° F.
$\frac{1000}{252458}$ths of the weight of a cubic inch of water	= 1 grain	=	·0039610571428
24 grains	= 1 pennywt.	=	·0950653714285
20 pennyweights	= 1 ounce	=	1·901307428571
12 ounces	= 1 pound	=	22·815689142857

N.B.—A cubic inch of distilled water at the maximum density weighs 253 troy grains.

V. AVOIRDUPOIS WEIGHT.

STANDARD.—The same as in Troy weight; and one Avoirdupois pound = 7000 *Troy grains*.

			Wt. in cub. inches of water.		Wt. in new gallons of water at 62° F.
27⅓ grains	= 1 dram	=	1·0831015625	=	$\frac{1}{9\frac{1}{2}\frac{1}{3}\frac{1}{3}}$
16 drams	= 1 ounce	=	1·7329625	=	$\frac{1}{100}$
16 ounces	= 1 pound	=	27·7274	=	$\frac{1}{10}$
28 pounds	= 1 quarter cwt.	=	776·3672	=	$2\frac{1}{2}$
4 quarters	= 1 hundred wt.	=	3105·4688	=	$11\frac{1}{2}$
20 cwt.	= 1 ton	=	6210·93760	=	224

N.B.—175 Troy pounds = 144 Avoirdupois pounds; and 175 Troy ounces = 192 Avoirdupois ounces.

VI. IMPERIAL GALLON MEASURE,

For all sorts of liquids, Corn, and other Dry Goods.

STANDARD.—Ten pounds Avoirdupois, or 277·274 cubic inches of distilled water (at 62° Fahrenheit's Thermometer, the Barometer being at 30 inches) are the contents of the new imperial gallon.

			lbs. Av. of water.		Cubic inches of water.
5 oz. Avoirdupois of water at 62°F.	= 1 gill	=	$\frac{5}{10}$	=	8·6643125
4 gills	= 1 pint	=	1¼	=	34·65925
2 pints	= 1 quart	=	2½	=	69·3185
4 quarts or 8 pints	= 1 gallon	=	10	=	277·274
2 gallons	= 1 peck	=	20	=	554·548
4 pecks or 8 gallons.	= 1 bushel	=	80	=	2218·192
8 bushels	= 1 quarter	=	640	=	17745·536

N.B.—The proportion of the imperial gallon to the Wine gallon is as 6 to 5 nearly, to the Ale gallon as 59 to 60 nearly, and to the Corn gallon as 33 to 32 nearly; its proportion to the old standard Scotch pint is as 59 to 22 nearly.

VII. HEAPED MEASURE,

For Coals, Culm, Lime, Fish, Potatoes, Fruit, &c.

STANDARD.—Eighty pounds Avoirdupois, or 2218·192 cubic inches of distilled water at 62° Fahrenheit's Thermometer, the Barometer being at 30 inches, are the contents of the new bushel, which is to be made "round with a plain and even bottom, being 19½ inches from outside to outside," and to be heaped in the form of a cone to the height of 6 inches.

		lbs. Av. of water.		cub. in. of water.
8 imperial gallons	= 1 bushel	= 80	=	2218·192
3 bushels	= 1 sack	= 240	=	6654·576
12 sacks	= 1 chaldron	= 2880	=	79854·912

N.B.—The depth of the imperial bushel is required by the Act to be 8 inches, though this is not expressed; because the height of the heap or cone is 6 inches, and this must be equal to three-fourths of the depth.

N.B.—The proportion of the imperial bushel to the old Standard Scotch Wheat Firlot is as 106 to 105 nearly, and to the old Standard Scotch Barley Firlot as 92 to 133 nearly.

VIII. DIMENSIONS OF THE DRY MEASURES.

STANDARD.—"The diameter shall be at least double the depth, and the height of the cone or heap shall be equal to three-fourths of the depth."

Imperial Dry Measures.	Depth.	Inside Diameter.	Outside Diameter at the mouth.	Breadth at the edge.	Height of the Heap.	Content when not heaped.	Content when heaped.
	Inches.	Inches.	Inches.	Inches.	Inches.	Cub. ins.	Cub. ins.
Bushel..	8·00000	18·78925	19·50000	·35538	6·00000	2218·192	2815·428
Bushel	6·34960	14·91304	15·47716	·28206	4·76220	1109·096	1407·744
Peck ..	5·03968	11·83648	12·28422	·22387	3·79776	554·548	703·872
Gallon or Peck	1·00000	9·39463	9·75000	·17769	3·00000	277·274	351·936
Half Gal.	3·17480	7·45652	7·73858	·14103	2·38110	138·637	175·968
Quart ..	2·51984	5·91824	6·14211	·11194	1·88988	69·3185	87·984

APPROXIMATE DIMENSIONS OF THE DRY MEASURES.

Imperial Dry Measure.	Depth.	Inside Diameter.	Outside Diamater at the mouth.	Breadth at the edge.	Height of the Heap.
	Inches.	Inches.	Inches.	Inches.	Inches.
Bushel	8	$18\frac{13}{16}$	$19\frac{1}{2}$	$\frac{3}{8}$	6
Half Bushel ...	$6\frac{2}{5}$	$14\frac{7}{8}$	$15\frac{1}{2}$	$\frac{5}{16}$	$4\frac{3}{5}$
Peck	$5\frac{1}{16}$	$11\frac{13}{16}$	$12\frac{5}{16}$	$\frac{1}{4}$	$3\frac{3}{4}$
Gallon	4	$9\frac{3}{8}$	$9\frac{3}{4}$	$\frac{3}{16}$	3
Half Gallon ...	$3\frac{3}{16}$	$7\frac{7}{16}$	$7\frac{3}{4}$	$\frac{1}{8}$	$2\frac{3}{4}$
Quart	$2\frac{1}{2}$	$5\frac{13}{16}$	$6\frac{1}{16}$	$\frac{1}{8}$	$1\frac{7}{8}$

TABLES OF EQUALIZATION.

IN the following tables of equalization, the most exact proportions are adopted, viz. 277274 English Wine Gallons = 231000 Imperial Gallons; 277274 Ale Gallons = 282000 Imperial Gallons; 277274 English Corn Gallons = 268800 Imperial Gallons; 138637 Standard Scotch Pints = 103404 Imperial Half Gallons; 2218192 Standard Scotch Wheat Firlots = 2197335 Imperial Bushels; 2218192 Standard Scotch Barley Firlots = 3205524 Imperial Bushels; 7000 Troy Pounds = 5760 Avoirdupois Pounds; 7000 Scotch Troy Pounds = $7621\frac{9}{17}$ Avoirdupois Pounds; 7000 old Scotch Tron Pounds = $10003\frac{1}{17}$ Avoirdupois Pounds; 360 Standard Scotch Ells = $372\frac{1}{2}$ Imperial Yards; and 3025 Standard Scotch Acres = 3844 Imperial Acres. These tables are also equalization tables of prices, as well as of weights and measures, but in the inverse ratio of the latter. Thus, for example, 1lb. Troy = ·822857lb. Avoirdupois; but when the price of a pound Avoirdupois is = 1, the price of a lb. Tron is = ·822857; also 1 lb. Avoirdupois = 1·215278lb. Troy; but when the price of a lb. Troy is = 1, the price of a lb. Avoirdupois is = 1·215278; the whole of the tables are calculated to the nearest millionth part of an unit.

	English Wine Gallon = Imperial Gallon.	English Ale Gallon = Imperial Gallon.	English Corn Gallon = Imperial Gallon.	Scotch Pint = Imperial Half Gallon.
1	0·833111	1·017045	0·969438	0.748615
2	1·666222	2·034089	2·938876	1·497230
3	2·499333	3·051134	2·908315	2·245845
4	3·332444	4·068178	3·877753	2·994460
4	4·165555	5·085223	4·847191	4·743075
6	4·998666	6·102267	5·816629	4·491690
7	5·831777	7·119312	6·786067	5·240305
8	6·664887	8·136356	7·755505	5·988920
9	7·497998	9·153401	8·724944	6·737534

	Scotch Wheat Firlot = Imp. Bushel.	Scotch Barley Firlot = Imp. Bushel.	Imperial Gallon = English Wine Gallon.	Imp. Gallon = English Ale Gallon.
1	0·990597	1·445161	1·200320	0·983241
2	1·981195	2·890321	2·400641	1·966482
3	2·971792	4·335482	3·600961	2·949723
4	3·962389	5·780643	4·801281	3·832965
5	4·952986	7·225803	6·001602	4·916206
6	5·943584	8·670964	7·201922	5·899447
7	6·934181	10·116125	8·402242	6·882688
8	7·924778	11·561285	9·602563	7·865229
9	8·915376	13·004446	10·802883	8·849170

	Imperial Gallon = English Corn Gallon.	Imperial Half-Gallon = Scots Pint.	Imperial Bushel = Scotch Wheat Firlot.	Imperial Bushel = Scotch Barley Firlot.
1	1·031520	1·340731	1·009492	0·691990
2	2.063051	2·681463	2·018984	1·383981
3	3·094576	4·022194	3·028476	2·075971
4	4·126101	5·362926	4·037968	2·767962
5	5·157624	6·703657	5·047460	3·459952
6	6·189152	8·044389	6·056952	4·151943
7	7·220677	9·385120	7·066444	4·843933
8	8·252202	10·725852	8·075936	5·535924
9	9·283728	12.066583	9·085428	6·227914

	Troy lb. = Avoirdupois lb.	Scotch Troy lb. = Avoirdupois lb.	Old Scotch Tron lb. = Avoirdupois lb.
1	0·822857	1·088831	1·429091
2	1·645714	2·177662	2·858182
3	2·468571	3·266494	4·287273
4	3·291429	4·355325	5·716364
5	4·114286	5·444156	7·145455
6	4·937143	6·532987	8·574545
7	5·760000	7·621818	10·003636
8	6·582857	8·710649	11·432727
9	7·405714	9·799481	12·861818

	Scotch Ell = Imperial Yard.	Scotch Acre = Imperial Acre.	Avoirdupois lb. = Troy lb.	Avoirdupois lb. = Scotch Troy lb.
1	1·033333	1·270744	1·215278	0·918412
2	2·066667	2·541488	2·430556	1.836824
3	3·100000	3·812231	3·645833	2 755237
4	4·133333	5·082975	4·861111	3·673649
5	5·166667	6·353719	6·076389	4 592061
6	6·200000	7·624463	7·291667	5·510473
7	7.233333	8·895207	8·506944	6·428885
8	8.266667	10·165950	9·722222	7·347298
9	9·300000	11·436694	10·937500	8·265710

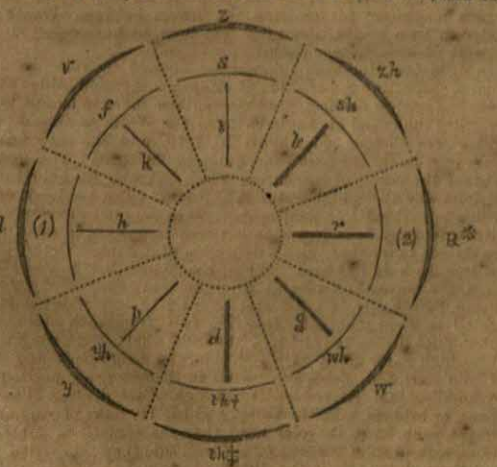
	Avoirdupois lb. = Old Scotch Tron lb.	Imperial Yard = Scotch Ell.	Imperial Acre = Scotch Acre.
1	0.699746	0·967742	0·786941
2	1·399491	1·935484	1·573881
3	2·099237	2·903226	2·360822
4	2·798982	3·870968	3·147763
4	3·498728	4·838710	3·934703
6	4·198473	5·806452	4·721644
7	4·898219	6·774194	5·508585
8	5·597964	7·741935	6·295525
9	6·297710	8·709677	7·082466

CORRESPONDENCE.

PHONETIC SHORT HAND.

Mr. Editor,—I have commenced studying your Lessons in Phonetic Short-hand, and I am very well satisfied with the progress I have already made. I very much admire this system; it seems to be simple in its theory and very easy in its application; while at the same time it is free from the many objections raised against the previously existing systems of short-hand writing. The method which I adopted in learning the "articulations," I found to be very useful and convenient, as by its means I was able to commit to memory their forms and positions in about an hour. So effective was this plan that I was able to write them for myself the next day.

I hope I shall not be trespassing on your time and patience by submitting the following scheme of the articulations to your attention. By means of this diagram, the relative positions of the articulations are easily determined and fixed in the mind, and rendered capable of being recalled at pleasure. I consider such a scheme highly advantageous to any person commencing the study of Phonetic Short-hand, as it presents at one view, and in their proper order, all the forms and positions of those characters with which he has to make himself acequainted.



SCHEME OF ARTICULATIONS.

The *breath* letters are represented by thin hair-stroke lines; and the *voice* letters by the same forms written comparatively thick and heavy.—I am, yours, &c.

Pitt.

Birmingham.

[Our intelligent and ingenious correspondent having been able to commit to memory our Short-hand scheme of articulations with very little trouble by means of his circular arrangement of the characters, we have much pleasure in submitting it to our readers. The diagram he furnished not being quite so accurate in showing the *directions of the curves* as could be wished, although the design is both neat and effective, we have given a corrected drawing of the plan, as it may assist many of our students, and perhaps induce many others to commence the study.

The following notes refer to the diagram:

* This character, *the curve r*, is always used *for R at the beginning of a word*: the other, or *line r*, is always used *for r at the end of a word*, and *otherwise as most convenient*.

(1) This is the *breath* correspondent, or whisper sound of *l*, the *ll* of the Welsh language: it does not occur in English.

(2) This is the *whisper sound of R = rh*: it does not occur in English, except in the *Cockney* pronunciation of the words *girl* and *harseguards*, where the sound of *r* is so gentle that it is scarcely heard; these words being pronounced *gal* and *oss-gads*. We have heard the whisper sound of *r* also in the *faulty* pronunciation of the words *idea* and *Jehovah*, and that even in the pulpit; viz., *idearh* and *Jehovarh*. Such errors ought to be carefully avoided.

‡ This character, the *thin curve th*, is always used when the sound is like *th* in the word *thin*.

‡ This character, the *thick curve th*, is always used when the sound is like *th* in the word *then*.

Our correspondent suggests the use of *short* instead of *full-sized* characters, when "yu" or "wu" precedes, as in *future, rebellious, &c., since*, as he judiciously observes, the "yu" or "wu" *implies a vowel after it*; and he points out that by this arrangement the double vowels in "*virtuous*" would be indicated by simply writing a full sized *S* with "yu" before it. But we must remind him of the fundamental principle of writing, which would thus be violated, viz.: that *articulation with vowels before them require to be written full-size*. The "yu" or "wu" merely shows that a *y* or *w* is to be pronounced *as well as* a vowel. A serious practical objection to the writing of short letters in this position, would be that *they would not afford room* for inserting the marks for y and w; and if these latter were omitted in quick writing—as they often must be—a needless ambiguity would be created in deciphering the Short-hand.

[To the preceding communication we now add the following, received some time ago.]

Mr. Editor,—I have examined a great many works upon short-hand, and give my opinion decidedly in favour of Taylor's system, which, with a few improvements made upon it by myself, I consider the best adapted for reporting. Having written the whole of the New Testament, and taken *eight hundred sermons* in short-hand, I can speak well as to the practical part of this art, and the benefit which is to be derived from the study of it. Twelve years ago I wrote a letter to the editor of a newspaper, stating that I owed all I knew to the study of short-hand. Being then a poor boy only earning a few shillings a week in the country, I had either to sit up very late or rise very early in order to learn what little I did know. To this letter, he gave only the following answer: "The letter of X. Y. Z. contains statements highly favourable to his industry and perseverance, but we hardly think that advantage could result from their publication." With this dictum I could not agree, for I am sure that great moral and spiritual advantages are to be derived from the study of short-hand.—I am, yours, &c.

J. S. Abbott.

[We have seen Mr. Abbot's New Testament in short-hand with his 800 sermons and various other productions, all written according to his improved Taylor's system, and they clearly show with what neatness and accuracy this system can be written; it is founded upon the most simple principles, and we believe it is the best adapted for reporting, although our own system is by far the most philosophical we have yet seen. Both in Bell's and Pitman's systems, the reporter is apt to make mistakes in quick writing, as the contrast in the form of many of the characters is not sufficiently great. The distinction between the thick and thin letters uttered by the same organ, is almost sure to be overlooked in taking notes from a rapid speaker. Those of our readers who wish to learn Taylor's improved systems should apply to James S. Abbott, Fishmongers' Hall, City.]

† The affectedly fine pronunciation of Londoners born within the sound of Bow bells.

LESSONS IN MECHANICS.—No. XIV.

ROAD-MAKING AND PUBLIC WORKS—(*continued*).

BRIDGES.

It is obviously impossible to carry on any ordinary road amid all the physical diversities of country through which it may be necessary for that road to pass, without having recourse to some artificial method of extension. Deep valleys may present themselves, or a river may intervene, and over both the road must be carried; in the former instance this may be done by a viaduct, in the latter by a bridge.

In the early ages of the world, bridges were unknown as a means of transit over rivers, and, accordingly, we not only find frequent mention of *fords* in the Bible, but also in many ancient historical and geographical works. The earliest bridges were rude and simple in their character, and we may form some idea of their appearance and stability from the flying bamboo bridges of the Indians, and the unpicturesque but strong wooden lintels which were stretched from bank to bank in the Orkneys and Hebrides. After the piers or posts were fixed in the bed of the river, they were connected at the top by stone or wooden lintels, but this contracted the passage of the waters, and a strong current not unfrequently swept away every vestige of the rude structure, which had been the only mode of communication between the opposite shores.

BRIDGE OF CORDS AT TERAY, ON AN AFFLUENT OF THE GANGES.

The Chinese lay claim to high antiquity in the construction of arched bridges. At Foutcheou there is a remarkable specimen of this description, 1,200 feet long, and about 36 feet wide. It had formerly a regular street built upon it, with shops on both sides of the way. Another at Suen-tcheon-fou is 2,500 feet long and 20 feet wide, and has 252 stone piers, on which is laid a roadway of huge stone blocks.

The Romans, also, were distinguished for many excellent specimens of bridge-building; the most magnificent was that built by the Emperor Trajan across the Danube. It is described as consisting of twenty piers of square stone, each of them rising 120 feet above the foundation, 60 feet in width, with a water-way between every two of 170 feet, which was consequently the span of the arch, so that the whole length of the bridge was nearly 1,500 yards. It was a noble structure, and in its ruins, which exist to this day, may be traced the bold, ambitious character of its projector, and the weakness of its destroyer, Adrian, who had it pulled down lest it should afford a passage to his enemies.

The fine bridge of Nismes also is of Roman origin, and answers the double purpose of a bridge over the river, and an aqueduct for supplying the people of Nismes with water. This bridge consists of six arches of majestic proportions and extraordinary strength, and is 470 feet long. On this level is erected a series of eleven arches, which are continued beyond the extremities of the bridge, and form a junction with the slope of the mountains on each side; over these is a series of 35 arches, much smaller than those below, though 850 feet in length, and supporting a canal on a level with the two mountains, along which the water is conveyed to Nismes by a continued aqueduct. This extraordinary edifice is built with very large stones, held together by iron cramps without cement, and is still in perfect preservation—a mighty monument of the perseverance of the ancient Romans, who have left in almost every country in the world imperishable evidence of their presence as rulers.

Of stone bridges there are many fine specimens, both in England and on the Continent; but in an early state of society wooden bridges were most commonly employed. The first efforts at constructing wooden bridges would be made by merely throwing the trunk of a tree across the stream: where the stream was too wide for such a method to succeed, piles would have to be driven into the bed of the river, and the planking continued from pier to pier. In America, wooden bridges, especially for railway purposes, are run up with immense rapidity. Old London Bridge was a wooden structure of the time of Henry II. (1176). With numerous alterations and repairs, it remained in use till 1831.

The first iron bridge in England was erected in 1779, over the Severn, at Coalbrook Dale. It consists of a single arch of about 100 feet span. Bishopwearmouth iron bridge, completed in 1796, is a single arch of 240 feet span; and Sunderland iron bridge, built about the same time, is 236 feet span. Southwark Bridge was built by Rennie, at a cost of £800,000. It is 718 feet between the abutments, and consists of three iron arches; the span of the centre arch is 250 feet. The weight of iron employed was nearly 6,000 tons.

Suspension bridges have also been employed extensively in this country and elsewhere. In India, and China, and South America, bridges of rope have for ages been used; these bridges are sometimes called hammocks; the ropes have to be renewed every eight or ten years. In an old and very rare treatise on curious machines, published at Venice in 1617, there are two engravings representing suspension bridges — one of iron chains, and the other of ropes. The latter is a very remarkable work of art; the author of the volume has evidently taken pains to render his drawing scientifically useful. Rope bridges have been frequently employed in time of war. Davila, in his history of the civil wars of France, speaks of a bridge of cables thrown over the river at the siege of Poitiers, in 1569, by Coligny. Henry, Prince of Orange, employed bridges of cords in his enterprise against Gaud at Bruges, in 1631. They were used by the French in Italy, in 1742; again in 1792, and during the Peninsular war.

In 1796 Mr. Finlay, an American, constructed an iron bridge in the United States. He afterwards obtained a patent, and erected a great number of smaller bridges in various parts of America: one over the Schuylkill was above 300 feet long. This probably originated the scheme which was proposed in 1807 by M. Belu, a French engineer, for crossing the Rhine between Wesel and Ruderich by a bridge, about 820 feet long, to be supported by a network of wrought-iron chains.

In 1818 the Holyhead Commission applied to Telford for his opinion respecting the erection of an iron suspension bridge at the Menai—a narrow channel, about seventeen miles in length, which separates the island of Anglesea from the Welsh mainland. The bridge was commenced August 10, 1819, and the mail coaches drove over it, for the first time, January 30, 1826. The distance between the points of suspension is 560 feet, and the height of the carriage-way above high water is 200 feet. The roadway of the bridge is divided into two carriage-ways, and is twelve feet wide, with a footway four feet wide between them. The main chains are sixteen in number, with a deflection of 37 feet. The weight of the iron work is 644 tons. While the Menai Bridge was in progress, the suspension pier at Brighton was constructed by Sir S. Brown. This pier is 1,136 feet long by 15 feet wide; it is supported on four piers, standing 200 feet from each other, upon oaken piles driven ten feet into the solid chalk, and rising 13 feet above high water mark. On each side, the main suspending chains of iron rods, four deep, two inches in diameter, are carried over pyramidical cast-iron towers 25 feet high. Each division of the four spans, or bridges, is 258 feet long, and has 117 links of one hundred weight each. At the pier head they are secured in substantial framework of solid timber; on the land side they are carried for 54 feet through tunnels in the cliffs, and strongly bolted to a vertical plate of iron.

LESSONS IN DRAWING.—No. XII.

ON TREES, AND THEIR APPENDAGES.

(*Continued from page* 91.)

Fig. 100.—*Bloom of the Lime Tree.*

Fig. 101.—*Leaves of the Lime Tree.*

In this lesson we proceed to show our students how to draw the different parts of a lime-tree.

Fig. 100 represents the delicate and beautiful bloom of the lime tree, with the exception of colour. Fig. 101 shows more clearly the exact form and position of the leaves on the branches. Fig. 103 represents a cluster of leaves, which shows the peculiar formation and arrangement of the foliage. Fig. 102 represents a very aged trunk, in which the usual direction of the process of decay is exhibited. Fig. 104 represents the body of the tree, shewing its ramification, in which, near the larger boughs, the gnarled and twisted character of its ramification is distinctly seen.

In making a proper representation of the trunk of the lime tree, the directions already given respecting the drawing of the oak apply equally to this tree; adding to these directions, our last observations, and at the same time referring also to the smaller sketch of the trunk of the oak, the practical student will be greatly aided in tracing the leading characteristics of the subject in hand, and he will have no peculiar difficulty to surmount in making his drawing.

Fig. 102.—*Trunk of the Lime Tree.*

In fig. 104, which gives the characteristic ramification of the lime tree, the student will see that the same observations may be made as were given in reference to the body of the oak; but he will also observe by this figure, that the angle of ramification is much more acute in this tree than in the oak, and that in the first instance, the principal branches of the tree shoot upwards, but that they have a tendency to form a curved line; and that a characteristic look of flexibility is given to the extremities of the branches by a turn in the curvature, as if the weight of the leaves bent them downwards.

For the benefit of many of our readers, we extract the following account, of the Lime or Linden tree from the Magazine of Art. The trees of this genus belong to the natural order *Tiliaceæ*, and are characterised by the possession of a five-parted deciduous calyx, five petals, numerous free or somewhat polyadelphous stamens, and a globose, villous, one-styled, five-celled ovary. Their leaves are alternate, heart-shaped, acute, serrated, and deciduous, with fragrant, yellowish panicled flowers. The wood of these trees is light, smooth, and white, and

the sap possesses a large quantity of sugar. The Lime tree is chiefly found in Europe and America. Botanists differ in their nomenclature of the varieties which compose the genus; the principal species, however, are *Tilia Europæa, Tilia Parvifolia, Tilia Rubra, Tilia Grandifolia*, which belong to Europe; and *Tilia Glabra, Tilia Laxiflora, Tilia Pubescens, and Tilia Heterophylla*, which belong to America.

Tilia Europæa, the European or common lime tree, is the most valuable. This variety, which grows very extensively in the middle and northern parts of Europe, is very common in England. Its petals are without scales, and its leaves, which are twice the length of the petioles, are cordate, acuminate, serrated, and smooth, with the exception of a tuft of hair at the origin of the veins beneath, the cymes are many-flowered, and the fruit is coaceous and downy. Its large size, handsome appearance, and profusion of sweet flowers, make it a very general favourite throughout this country and most parts of the continent, where it is extensively planted in parks and other places of public recreation. Its wood is well adapted for carving, being white, close-grained, and smooth. The carvings at Windsor Castle, those of Trinity College, Cambridge, and those at Chatsworth, are of lime wood, as, indeed, are most of the other fine specimens of this branch of art in England. The fibres of the bark, which is tough, form the material of an extensive manufacture of cordage and matting in Russia and Sweden.* Nor are these the only ways in which it is profitable. Its flowers secrete a large quantity of saccharine matter, and exhale a delicious scent, which render them a great favourite with bees. The honey procured from this tree is in great repute; and thus a celebrity has been given to the honey of Kowno, a small town on the Niemen, in Lithuania, which is surrounded by a forest of lime trees. Many specimens of this tree exist which are remarkable for their great age and size. At Neustadt, in Würtemberg, there is a prodigious lime tree, which adds its name to that of the town, this being called *Neustadt an der Linden* (Neustadt at the lime tree). The age of this enormous tree is said, probably with some exaggeration, to be one thousand years. According to a German writer, it required the support of sixty pillars so early as the year 1392, and attained its present size in 1541. It now rests its immense foliage, says the same authority, on above one hundred props, and spreads out so far that a market can be held under its shade. It is of this tree that Evelyn (writing in the middle of the seventeenth century) says that it was "set about with divers columns and monuments of stone (eighty-two in number, and formerly one hundred more), which several princes and noble persons have adorned, and which, as so many pillars, serve likewise to support the umbrageous and venerable boughs; and that even the tree had been much ampler, the ruins and distances of the columns declare, which the rude soldiers have greatly impaired." There is another colossal specimen of the same species in the church-yard of the village of Cadiz, near Dresden. The circumference of its trunk is said to be forty feet, and though completely hollow through age, its inner surface is covered with a very fresh and healthy bark. Besides these trees, there are many other very old individuals of this species, both in England and on the continent. The principal street of Berlin is called *Unter den Linden* (between the lime trees), owing to the rows of these trees which grow on each side; it is said that the Electoress Dorothea planted the first of them with her own hands, in the year 1680.

Tilia parvifolia, the small-leaved, or, as it is called in Germany, the winter lime tree. Its petals are without nectaries or scales, and its leaves very similar to those of the last species; like which, too, it grows in forests, both in lowland and mountainous districts. Its trunk grows perfectly upright, and is covered with a jagged, rough bark, which becomes smooth as it ascends to the upper branches. Trees of this species do not generally grow so large as those we have described. The greatest diameter of their trunk is about six feet, and their usual height eighty feet. This tree attains its full growth in one hundred and fifty years, and its age averages from two hundred to three hundred years. The wood is not so white as that of the European lime, but it is of a reddish yellow colour. Its trunk is not so round as that of the other, and it is more knotty. Its greatest peculiarity, however, is the smallness of its leaves, which are only from one inch and a half to two inches in breadth. It is a native of the subalpine districts in the north of Europe. In this country it is common in the woods of Essex and Lincolnshire.

Tilia rubra, the red lime tree, which many botanists consider merely a variety of the European lime, is a native of Taurida. It has, like all the other species, cordate leaves, unequal at the base, and hairy beneath; the fruit globose and smooth. When young, its branches are of a beautiful coral red colour, and thence it has been called by some botanists *Tilia corallina*.

Tilia grandifolia, or the broad-leaved lime. The peculiarity from which this variety takes its name, is its chief distinction. Its leaves, which, like those of the others, are hard-shaped and serrated, vary in breadth from three to six inches. It attains its full growth in about one hundred years, and then varies in height from sixty to one hundred feet; the diameter of its trunk varies from two to three feet. The bark of the young trees is of a dark green hue, and is covered with wart-like excrescences; in old trees it turns to a reddish grey colour. In Switzerland and the south of Europe this is the the most common of all the varieties of the lime tree. It is scarce in this country.

The species which have now been noticed are the most important of the European varieties of this tree. They all differ from those of North America in *not* having nectaries or scales at the base of their petals. A brief enumeration of the American varieties will be sufficient to render this sketch of the lime tree tolerably complete.

Tilia glabra, or black American lime. The leaves of this tree are deeply cordate, serrated, and somewhat coriaceous and smooth. The petals are truncate and crenate at the apex, and equal in length to the style; the fruit is ovate and somewhat ribbed. It is a native of North America, in Canada and the northern parts of the United States. It is only found in the southern states at a considerable elevation on the Alleghany mountains. It was introduced into England in 1752, but has not been much cultivated.

Tilia laxiflora, or loose-flowered American lime, is a native of America from Maryland to Georgia. It has cordate, serrated, smooth leaves; loose panicles of flowers; emarginate petals; and globose fruit. Loudon considers it and the other American limes as only varieties of the last species. It has been known in England only since the year 1820, and has been but little planted since that period.

Tilia pubescens, or pubescent American lime, is a native of the southern parts of the United States, from Virginia to Georgia, where it is principally found on the banks of rivers. Its leaves are somewhat cordate and oblique, truncate at the base, and pubescent beneath; the petals are emarginate, and shorter than the style; the fruit is globose. It is a much less vigorous tree than the last-named; and has much smaller leaves and more slender branches.

Tilia heterophylla, or white American lime. This tree is very abundant in Maryland, Delaware, and the western states of America. Its leaves are ovate and downy beneath, sometimes cordate at the base and obliquely or equally truncate; its fruit is globose. The white American lime has been known in France for more than a century, but it was introduced into England only so late as 1811.

Thus the different varieties of this beautiful tree appear to be

* The Lime tree is nowhere, perhaps, so subservient to the use of man as in the Russian dominions; and on account of its great value, it is commanded by law to be planted on the borders of many of the great roads; and these trees furnish the bees with a large quantity of honey in their frequent flowers. Garden-mats, so extensively employed in Britain, and called bast matting, are all imported from Russia, and are constructed of the inner bark of the *Tilia Europæa*. The same substance affords ropes, as has been already observed, which, though wanting the solidity of hempen cordage, yet being very cheap and not liable to rot, are commonly used in many places for drawing water from the well. To bark the trees for this purpose, it is customary to grow the trees in rows, and cut them every ten or fifteen years, generally in the month of May, at the time when they are full of sap, which renders the removal of their bark easy, so that it is pulled off in long stripes, measuring from fifteen to twenty feet. As soon as the bark is dry, it is rolled up in bundles and kept in a cool place; and when required for use, it is steeped for several days in water, by which the cortical layers, which constitute its thickness, become readily separable. The part nearest the wood is the best, and is employed for making the ropes; the outer and coarser layers are made into strings for corn-sheaves, hay-bands, &c. In France, mats were formerly manufactured from the bark of the Lime-tree; but this appears to have been abandoned. A good sort of paper may also be obtained from this bark. When the trunks of these trees are stripped of their bark, they are, according to their size, useful for various purposes; the larger ones for turning, and the smaller ones for ladders, props, &c.

rather varieties of the same species differing only in some slight physiological details, than distinct species in themselves. A general description of all would correctly apply, with some few exceptions, to each individual variety.

In copying the different parts of the lime-tree as detailed in this lesson, the student should endeavour to seize the character of the forms, and aim at giving the easy flow which governs all the lines, applying the principle exemplified in the small sketch of the trunk of the oak, fig. 97. By leaving, as before directed, the minor details until the principal features are secured, the student may, at the finish, add force to the shadows, with a pencil which makes a strong mark. Black lead pencils are sold at all prices, from a penny upwards. Very suitable pencils may be had at threepence each, and using the kind marked H B for the commencement, the pencil marked B is fit for the shadows, although too soft for general purposes.

Fig. 103.—*Lime Tree Leaf Cluster.*

Fig. 104.—*Ramification of the Lime Tree.*

LESSONS IN FRENCH.—No. LXI.

By Professor Louis Fasquelle, LL.D.

§ 62. ALPHABETICAL TABLE OF THE IRREGULAR, DEFECTIVE, PECULIAR, AND UNIPERSONAL VERBS.

SEE § 44, RULE (2.) § 43, RULE (7.) and § 49.

The figures placed after the infinitive of the verbs indicate the conjugations to which they belong.—The tenses not given in this Table are not used.

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
ABATTRE, 4. *to pull down*	abattant	j'abats	j'abattais	j'abattis	j'abattrai	j'abattrais	abats	j'abatte	j'abattisse
	abattu, *f.* e.	*see* BATTRE							
ABSOUDRE, 4. *to absolve* aux. avoir defective.	absolvant	j'absous	j'absolvais		j'absoudrai	j'absoudrais		j'absolve	
	absous	tu absous	tu absolvais		tu absoudras	tu absoudrais	absous	tu absolves	
	absout	il absout	il absolvait		il absoudra	il absoudrait	q. absolve	il absolve	
		n. absolvons	n. absolvions		n. absoudrons	n. absoudrions	absolvons	n. absolvions	
		v. absolvez	v. absolviez		v. absoudrez	v. absoudriez	absolvez	v. absolviez	
		ils absolvent	i. absolvaient		i. absoudront	i. absoudraient	q. absolvent	i. absolvent	
ABSTENIR (s') 2. *to abstain*	s'abstenant	je m'abstiens	je m'abstenais	je m'abstins	je m'abstien- [drai	je m'abstien- [drais		je m'abstienne	je m'abstinsse
	abstenu, *f.* e.	ref. *see* TENIR					abstiens-toi		
ABSTRAIRE, 4. *to abstract*	abstrayant	j'abstrais	j'abstrayais		j'abstrairai	j'abstrairais		j'abstraie	
	abstrait, *f.* e.	*see* TRAIRE					abstrais		
ACCOURIR, 2. *to run to*	accourant	j'accours	j'accourais	j'accourus	j'accourrai	j'accourrais		j'accoure	j'accourusse
	accouru, *f.* e.	*see* COURIR					accours		
ACCROÎTRE, 4. *to increase*	accroissant	j'accrois	j'accroissais	j'accrus	j'accroîtrai	j'accroîtrais		j'accroisse	j'accrusse
	accrû, *f.* e.	*see* CROÎTRE	also reflec.				accrois		
ACCUEILLIR, 2. *to welcome*	accueillant	j'accueille	j'accueillais	j'accueillis	j'accueillerai	j'accueillerais		j'accueille	j'accueillisse
	accueilli, *f.* e.	*see* CUEILLIR					accueille		
ACHETER, 1. *to buy* aux. avoir § 49, (6) peculiar.	achetant	j'achète	j'achetais	j'achetai	j'achèterai	j'achèterais		j'achète	j'achetasse
	acheté, *f.* e.	tu achètes	*like* CHANTER		tu achèteras	tu achèterais	achète	tu achètes	*like*
		il achète			il achètera	il achèterait	q. achète	il achète	CHANTER
		n. achetons			n. achèterons	n. achèterions	achetons	n. achetions	
		v. achetez			v. achèterez	v. acheteriez	achetez	v. achetiez	
		i. achètent			ils achèteront	i. achetéraient	q. achètent	ils achètent	
ACHEVER, 1. *to complete* aux. avoir § 49, (6) peculiar.	achevant	j'achève	j'achevais	j'achevai	j'achèverai	j'achèverais		j'achève	j'achevasse
	achevé, e.	tu achèves	*like* CHANTER		tu achèveras	tu achèverais	achève	tu achèves	*like*
		il achève			il achèvera	il achèverait	q. achève	il achève	CHANTER
		n. achevons			n. achèverons	n. achevèrions	achevons	n. achevions	
		v. achevez			v. achèverez	v. achèveriez	achevez	v. acheviez	
		i. achèvent			ils achèveront	i. achèveraient	q. achèvent	i. achèvent	
ACQUÉRIR, 2. *to acquire* aux. avoir irregular.	acquérant	j'acquiers	j'acquérais	j'acquis	j'acquerrai	j'acquerrais		j'acquière	j'acquisse
	acquis, *f.* e.	tu acquiers	tu acquérais	tu acquis	tu acquerras	tu acquerrais	acquiers	tu acquières	tu acquisses
		il acquiert	il acquérait	il acquit	il acquerra	il acquerrait	q. acquière	il acquière	il acquît
		n. acquérons	n. acquérions	n. acquîmes	n. acquerrons	n. acquerrions	acquérons	n. acquérions	n. acquissions
		v. acquérez	v. acquériez	v. acquîtes	v. acquerrez	v. acquerriez	acquérez	v. acquériez	v. acquissiez
		i. acquièrent	ils acquéraient	ils acquirent	ils acquerront	i. acquerraient	q. acquièrent	i. acquièrent	i. acquissent
ADJOINDRE, 4. *to associate, &c.*	adjoignant	j'adjoins	j'adjoignais	j'adjoignis	j'adjoindrai	j'adjoindrais		j'adjoigne	j'adjoignisse
	adjoint, *f.* e.	*see* JOINDRE					adjoins		
ADMETTRE, 4. *to admit*	admettant	j'admets	j'admettais	j'admis	j'admettrai	j'admettrais		j'admette	j'admisse
	admis, *f.* e.	*see* METTRE					admets		
ALLER, 1. *to go* aux. être irregular	allant	je vais	j'allais	j'allai	j'irai	j'irais		j'aille	j'allasse
	allé, *f.* e.	tu vas	tu allais	tu allas	tu iras	tu irais	va	tu ailles	tu allasses
		il va	il allait	il alla	il ira	il irait	q. aille	il aille	il allât
		n. allons	n. allions	n. allâmes	n. irons	n. irions	allons	n. allions	n. allassions
		v. allez	v. alliez	v. allâtes	v. irez	v. iriez	allez	v. alliez	v. allassiez
		ils vont	ils allaient	i. allèrent	ils iront	i. iraient	q. aillent	i. aillent	i. allassent
AMENER, 1. *to bring*	amenant	j'amène	j'amenais	j'amenai	j'amènerai	j'amènerais		j'amène	j'amenasse
	amené, *f.* e.	§ 49, (6)	*see* ACHEVER				amène		
AMONCELER, 1. *to heap*	amoncelant	j'amoncelle	j'amoncelais	j'amoncelai	j'amoncellerai	j'amoncelle- [rais		j'amoncelle	j'amoncelasse
	amoncelé, *f.* e.	§ 49, (4)	*see* APPELER				amoncelle		
APPARAÎTRE, 4. *to appear*	apparaissant	j'apparais	j'apparaissais	j'apparus	j'apparaîtrai	j'apparaîtrais		j'apparaisse	j'apparusse
	apparu, *f.* e.	*see* PARAÎTRE					apparais		
APPARTENIR, 2. *to belong*	appartenant	j'appartiens	j'appartenais	j'appartins	j'appartien- [drai	j'appartien- [drais		j'appartienne	j'appartinsse
	appartenu, *f.* e.	*see* TENIR					appartiens		
APPELER, 1. *to call* aux. avoir § 49, (4) peculiar.	appelant	j'appelle	j'appelais	j'appelai	j'appellerai	j'appellerais		j'appelle	j'appelasse
	appelé, *f.* e.	tu appelles	*like*	*like*	tu appelleras	t. appellerais	appelle	tu appelles	*like*
		il appelle	CHANTER	CHANTER	il appellera	i. appellerait	q. appelle	i. appelle	CHANTER
		n. appelons			n. appellerons	n. appellerions	appelons	n. appelions	
		v. appelez			v. appellerez	v. appelleriez	appelez	v. appeliez	
		ils appellent			j. appelleront	i. appelleraient	q. appellent	i. appellent	
APPRENDRE, 4. *to learn*	apprenant	j'apprends	j'apprenais	j'appris	j'apprendrari	j'apprendrais		j'apprenne	j'apprisse
	appris, *f.* e.	*see* PRENDRE					apprends		
APPUYER, 1. *to support* aux. avoir § 43, (2) peculiar.	appuyant	j'appuie	j'appuyais	j'appuyai	j'appuierai	j'appuierais		j'appuie	j'appuyasse
	appuyé, *f.* e.	tu appuies	t. appuyais	*like*	t. appuieras	t. appuierais	appuie	tu appuies	*like*
		il appuie	il appuyait	CHANTER	i. appuiera	i. appuierait	q. appuie	il appuie	CHANTER
		n. appuyons	n. appuyions		n. appuierons	n. appuierions	appuyons	n. appuyions	
		v. appuyez	v. appuyiez		v. appuierez	v. appuieriez	appuyez	v. appuyiez	
		ils appuient	i. appuyaient		i. appuieront	i. appuieraient	q. appuient	ils appuient	
ASSAILLIR, 2. *to assault*	assaillant	j'assaille	j'assaillais	j'assaillis	j'assaillirai	j'assaillirais		j'assaille	j'assaillisse
	assailli, *f.* e.	tu assailles	t. assaillais	t. assaillis	t. assailliras	t. assaillirais	assaille	t. assailles	t. assaillisses
		il assaille	i. assaillait	i. assaillit	i. assaillira	i. assaillirait	q. assaille	i. assaille	i. assaillît
		n. assaillons	n. assaillions	n. assaillîmes	n. assaillirons	n. assaillirions	assaillons	n. assaillions	n. assaillissions
		v. assaillez	v. assailliez	v. assaillîtes	v. assaillirez	v. assailliriez	assaillez	v. assailliez	v. assailliesiez
		ils assaillent	i. assaillaient	i. assaillirent	i. assailliront	i. assailliraient	q. assaillent	i. assaillent	i. assaillissent

List of Irregular Verbs, continued.

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
ASSEOIR, 3, *to set something down*	asseyant assis, *f.* e. *	j'assieds *see* S'ASSEOIR	j'asseyais	j'assis	j'assièrai	j'assièrais	assieds	j'asseie	j'assisse
ASSEOIR, (s') 3. *to sit down* aux. être irregular.	s'asseyant assis, *f.* e.	j. m'assieds t. t'assieds i. s'assied n. n. asseyons v. v. asseyez i. s'asseient	je m'asseyais t. t'asseyais i. s'asseyait n. n. asseyions v. v. asseyiez i. s'asseyaient	j. m'assis t. t'assis t. s'assit n. n. assîmes v. v. assîtes i. s'assirent	je m'assiérai t. t'assiéras i. s'assiéra n. n. assiérons v. v. assiérez i. s'assiéront	j. m'assiérais t. t'assiérais i. s'assiérait n.n. assiérions v. v. assiériez i. s'assiéraient	assieds toi q. s'asseie asseyons n. asseyez v. q. s'asseient	je m'asseie t. t'asseies i. s'asseie n. n. asseyions v. v. asseyiez i. s'asseient	je m'assisse t. t'assisses i. s'assît n. n. assissions v. v. assissiez i. s'assissent
ASTREINDRE, 4. *to compel*	astreignant astreint, *f.* e.	j'astreins *see* CEINDRE	j'astreignais	j'astreignis	j'astreindrai	j'astreindrais	astreins	j'astreigne	j'astreignisse
ATTEINDRE, 4, *to attain*	atteignant atteint, *f.* e.	j'atteins *see* CEINDRE	j'atteignais	j'atteignis	j'atteindrai	j'atteindrais	atteins	j'atteigne	j'atteignisse
ATTELER, 1. *to put to, harness*	attelant attelé, *f.* e.	j'attelle § 49, (4)	j'attelais *see* APPELER	j'attelai	j'attellerai	j'attellerais	attelle	j'attelle	j'attelasse
ATTRAIRE, 4. *to attract*	attrayant attrait, *f.* e.	j'attrais *see* TRAIRE	j'attrayais		j'attrairai	j'attrairais	attrais	j'attraie	
AVENIR, 2. *to happen*	avenant avenu	il avient *it happens*	il avenait *it was happening*	il avint *it happened*	il aviendra *it will happen*	il aviendrait *it would happen*		il avienne *it might happen*	il avînt *it might happen*
AVOIR, *to have*	*see model* § 47								
AVOIR (y) *to be there*	y ayant eu (unip.)	il y a *there is, are*	il y avait *there was, were*	il y eut *there was, were*	il y aura *there will be*	il y aurait *there would be*		il y ait *there may be*	il y eût *there might be*

LESSONS IN ENGLISH.—No. L.

By JOHN R. BEARD, D.D.

CASE.

OUR grammatical terms are derived from the Latin. In Latin grammar, *case* denotes the change or changes which nouns and pronouns undergo in their terminations corresponding with certain changes in signification. Thus nubes is *a cloud*; but nubi is *to a cloud*; where the termination or what is called the case-ending *es*, is changed into the case-ending *i*. The case-endings of the *plural* vary from the case-endings of the *singular*. I present this Latin noun in full, together with the English meanings ;*

	SINGULAR.		PLURAL.	
Cases.	*Latin.*	*English.*	*Latin.*	*English.*
NOMINATIVE.	nubes	*a* cloud	nubes	clouds
GENITIVE.	nub*is*	*of* a cloud	nub*ium*	*of* clouds
DATIVE.	nub*i*	*to* a cloud	nub*ibus*	*to* clouds
ACCUSATIVE.	nub*em*	*a* cloud	nubes	clouds
VOCATIVE.	nubes	*o!* cloud	nubes	*o!* clouds
ABLATIVE.	nube	*by* a cloud	nub*ibus*	*by* clouds

Now here you see what is expressed by the English *of* is in the Latin expressed by the letter *s* (the *i* belongs to the stem or root of the word) ; so our *to* is represented by *i*, and our *by* is represented by *e*. In general, then, we may say that the changes of meaning which the Romans represented by variations in the *endings* of nouns, we express by *prepositions*. These variations in the endings of nouns are in Latin grammar termed *case-endings*, or *cases*. Instead of *case-endings* we employ *prepositions*. In the Latin sense of the term, then, *cases* do not exist in English nouns. For the student will observe that *cloud* in the singular, and *clouds* in the plural, remain through all the six Latin cases unchanged.

The Anglo-Saxon, however, the parent of the English, had *cases*, and a relic of its cases still remains in what may be called the Saxon *genitive*. Thus the Saxon *cynges dohtor* is our "*king's daughter*," where (the *c* is pronounced like *k*); *cynges* is in the *genitive* case. This genitive has been continued in the English, the *e* being dropped and represented by an apostrophe, thus we have *king's* for *cynges*.

This is the true origin of our form in *'s*, as for example in king's, queen's, boy's, girl's. It has, however, been conceived that the *s* in this genitive arose from an abbreviation of *his*, and so we read in the Book of Common Prayer "for Christ *his* sake," which should be "for Christ's sake." If, after the exhibition of the real origin of our form in *'s* as a matter of fact, it was necessary to confute the theory just mentioned, we should do so by remarking that it does not account for the given phenomena, inasmuch as we say "the Queen's majesty," which cannot be expanded into "the queen *his* majesty," the sense requiring "the queen *her* majesty;" but if *her* is here necessary, whence comes the *s* of the genitive?

This Saxon genitive is also represented in English by the preposition *of*. The words of the New Testament (John i. 29), "This is the lamb *of* God," stand in Luther's German translation, *Das ist Gottes lam*, literally, "This is God's lamb." Here the German *es* is represented by the English *of*.

It appears, then, that in English we have two ways of expressing what the Latins expressed by the termination *s* or *is*; for this purpose, we may use *'s*, or *of*.

The *'s* is of German or rather Saxon (say Teutonic, which includes both) origin. Whence comes the *of*? The preposition *of* is of French (Norman-French) origin, being the translation of the French *de* which means *of*. The words stand in the French Bible thus "Voila l'agneau *de* Dieu," i. e. *behold the lamb of God*. I put the several forms together, beginning with the Greek (in English characters) and the Latin, thus :—

GREEK	amnos	Theou
LATIN	agnus	Dei
ANGLO-SAXON	Godes lamb	
GERMAN	Gottes lam	
SAXON GENITIVE	God's lamb	
FRENCH	agneau	*de* Dieu
FRENCH GENITIVE	lamb	*of* God

In the case of the Latin noun nubes, *s* (*is*) has the characteristic of the *genitive*. In the Greek noun Theou (*of God*), and in the Latin noun Dei (*of God*), the terminations *ou* and *i*, are respectively the characteristics of the genitive in these languages. If, however, you bear in mind that *s* is one form of the genitive in Latin (as it is of the genitive of many nouns in Greek also), you will then learn that the relation indicated by our preposition *of*, that is, a relation of origin or possession, is in English, in German, in Anglo-Saxon, in Latin and in Greek, signified by the letter *s*. Now, as in Greek, Latin, Saxon and German, this relation is denominated *a case*, we seem justified in so calling it in English. We are thus taught that in English we have *one case*, namely, the *genitive* or *possessive*. We also learn that what the Greeks and others express by means of a *case-ending* alone, we express, by means of a *case-ending* and the preposition *of*. These two modes cannot, however, be employed, the one or the other, indifferently; but of that I shall speak by-and-by.

Something of a similar nature is found in the classical languages, for instance, *to a cloud* in Latin may be rendered by *nubi* or *ad nubem*, that is, simply by a *case-ending*, or by a *case-ending aided by a preposition*. The meaning produced by these two forms is not in both instances the same. But what I wish you to observe is, that in Latin, prepositions are employed to express the relations of nouns with verbs, no less than in English. With the *genitive*, how-

* For the sake of distinct comparison, the *case-endings* of the noun, and the *corresponding meaning* in English are marked in Italics.

ever, *no preposition* (strictly so called) is employed. You must observe that in Latin case-endings are used as well as and together with prepositions. The opposite is the fact in English, for if you refer to the form or declension of nubes, *cloud*, before given, you will see that our word cloud remains unchanged through all the different cases. Hence it appears as a general fact, that what the Latins expressed by case-endings alone, or by case-endings and prepositions, we, dropping the case-endings, express exclusively by prepositions. The only exception to this statement is in the instance of the genitive case, for there we have one form with a case-ending and without a preposition, and another form with a preposition and without a case-ending.

In English, then, there is *one case*, the possessive;—are there more cases than one? If we follow the analogy of the Latin grammar, we may admit that in English there is also *a nominative* case, for in Latin as in English the *nominative* is the original and uninflected (*unchanged at the end*) form of the word. Thus as *cloud's* is the *possessive*, so *cloud* is the *nominative*.

We have then been led to admit two cases, the *nominative* and the *genitive*, as *cloud*, *cloud's*. Can we go farther? according to classical analogy certainly not, for *cloud*, as is seen above, undergoes no other modification. Thus, for example, the word *cloud* remains the same in the *nominative*, the *dative*, the *accusative*, and the *ablative* cases, as appears in these instances (to which for the sake of illustration I have prefixed Latin denominations).

NOMINATIVE	*The cloud* is dense
DATIVE	He gave brightness *to the cloud*
ACCUSATIVE	He dispersed *the cloud*
VOCATIVE	*O cloud*, be gone!
ABLATIVE	He was conducted *by a cloud*

Here are several varieties of meaning. How are these varieties signified? Clearly not by *cloud*, for that remains the same throughout; but by the prepositions *to* and *by* and the form O, the form of direct address or invocation. But in Latin, changes at the ends of nouns are essential to the cases. If then such changes do not (generally) exist in English, why should we employ the Latin term case? At any rate why should it be applied in English, to instances in which there are no case-endings? We seem then justified in declaring that in English, there is no *dative* case, no *accusative* or *objective* case, no *vocative* case, no *ablative* case. To feign cases in these instances is to lessen the simplicity of our language, and to augment the learner's difficulties. Nor are cases in these instances required by the exigencies of parsing,—that is, a systematic and orderly explanation of the facts and the laws of a language. Logic will supply us with the needful terms. Instead of the *nominative* case we may with advantage speak of the *subject*, and instead of the *objective* or *accusative* case, we may speak of the *object*. On the whole, therefore I think it more accordant with fact and good sense, as well as more conducive to intelligibility, to discard the term *case* altogether, except in the sole instance in which a specific form exists, and to which I have already given the name of *the Saxon genitive*.

Nor is this conclusion impeached by the fact, that in the pronouns we have remnants of an *accusative* case, properly so called; as for example in *me*, (nominative *I*), *thee* (nominative *thou*), *us* (nominative *we*). Undoubtedly the English if viewed in its mother tongue, the Anglo-Saxon, had what may rightly be termed cases. But we are studying not Anglo-Saxon, but English, and consequently it is the facts and the laws of the English, as it now is, with which we have to do; nor are we justified in referring to any other tongue, except for the express purpose of throwing light on the English—*its* facts, *its* usages, *its* laws. And we are not compelled to adopt the term *case* in regard to the forms *me*, *thee*, &c., for the term *object* is applicable to *pronouns* no less than to *nouns*.

Adhering, then, to established usage, I define *case* to be the change which nouns take in their terminations as expressive of corresponding changes of meaning, and I add, that in English, there are only two *cases*, the nominative, or the original form of the noun, and the *possessive*, or what, for the sake of distinction, I have called *the Saxon genitive*.

The term *genitive* arose from the idea that the case so named denoted *generation, origin, birth, source*, as *a man's son*. From the idea of *generation*, or giving life, comes the idea of *possession*; as William's son, e. g., "this boy is William's son, not Richard's;—"this is Henry's dog;" "this is Charlotte's doll."

I have already intimated that the real or Saxon genitive differs in its application from the false genitive or the form derived from the Norman-French. Thus we can say *the man's end*, but we cannot say *the ball's end*. Why can we say the one, and not the other? The *real genitive*, as we have seen, denotes *origin* or *possession*. Not so the *false genitive*. When I say "the back of the chair" I express a relation much more vague than when I say "the man's back." *Possession* denotes a *possessor*, but the chair is not a possessor. Consequently the former, which denotes possession, cannot properly be used of the chair. Hence I deduce the general rule, that *nouns which denote or imply a real possessor may be used in the possessive case, and those only*; consequently other nouns or nouns, which do not properly signify a possessor, must be constructed with the aid of the preposition *of*; as in the following instances:—

The Possessive Case.	*The Preposition "of."*
Byron's Childe Harold	the side of the house
The Queen's diamond	the edge of the precipice
The Mayor's liberality	the ridge of the wall

The forms of the possessive case may be exchanged with the forms made by means of the preposition *of*; thus we may say,

The Childe Harold of Byron
The Diamonds of the Queen
The liberality of the Mayor

But the rule cannot be reversed, that is, you cannot turn the false into the true genitive, and say,

The house's side
The precipice's edge
The wall's ridge

Poetry indeed, in personifying objects, may and does employ of things without life, that is things to which possession cannot strictly be ascribed the real genitive, as *Victory's crown*. The imitation of this in prose gives an affected air to the composition, and is to be avoided. In a few instances, however, custom sanctions the use of the Saxon genitive in its application to objects where no real possession is intended or implied, e. g.:

The *sun's* distance from the earth is greater than the *moon's*.
We saw a whale at a *boat's* length from the *ship's* prow.
His house is not five *minutes'* walk from this spot.

The apostrophe in *man's* has already been explained; it represents the German and Saxon *e*. This *e* is found only in the *possessive singular*. To the possessive singular, therefore, the apostrophe specially belongs, and according to its origin, the apostrophe should stand immediately before the *s* as the *king's son*. Sometimes, however, it is actually found after an *s*, as in *childrens' toys*. The reason is that the apostrophe borrowed from the *Saxon singular* has been extended to *English plurals*, thus:—

Singular.	*Plural.*
The child's toys	the childrens' toys
The man's houses	the mens' houses
The wife's gown	the wives' gowns

But observe, the apostrophe, which in the singular is placed before the *s*, is in the plural placed after the *s*. The apostrophe, however, is not to be employed unless with a possessive case.

In pronunciation it is not unusual to drop the *s* of the possessive when the noun itself ends in *s*, thus instead of *Johnses* (*John's*) book, we say *Johns* (*Johns'*) book. Accordingly, when a noun ends in *s*, some do not add the *s* of the possessive case, but simply place the apostrophe after the *s* of the nouns, as *Richardsons' hat*. The omission, however, is only partial.

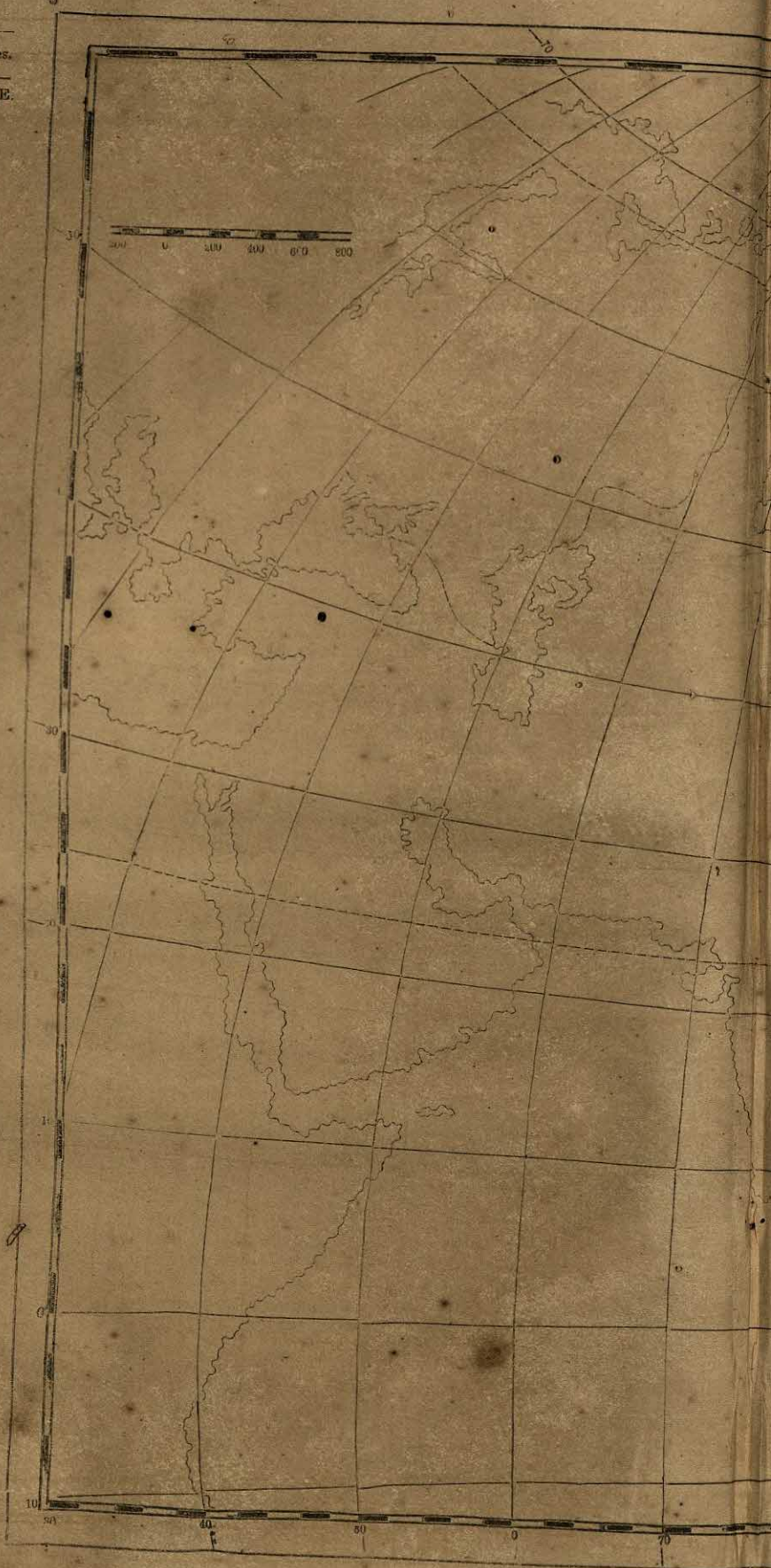
An abbreviation also takes place when several nouns in the possessive case come in succession, e. g.:

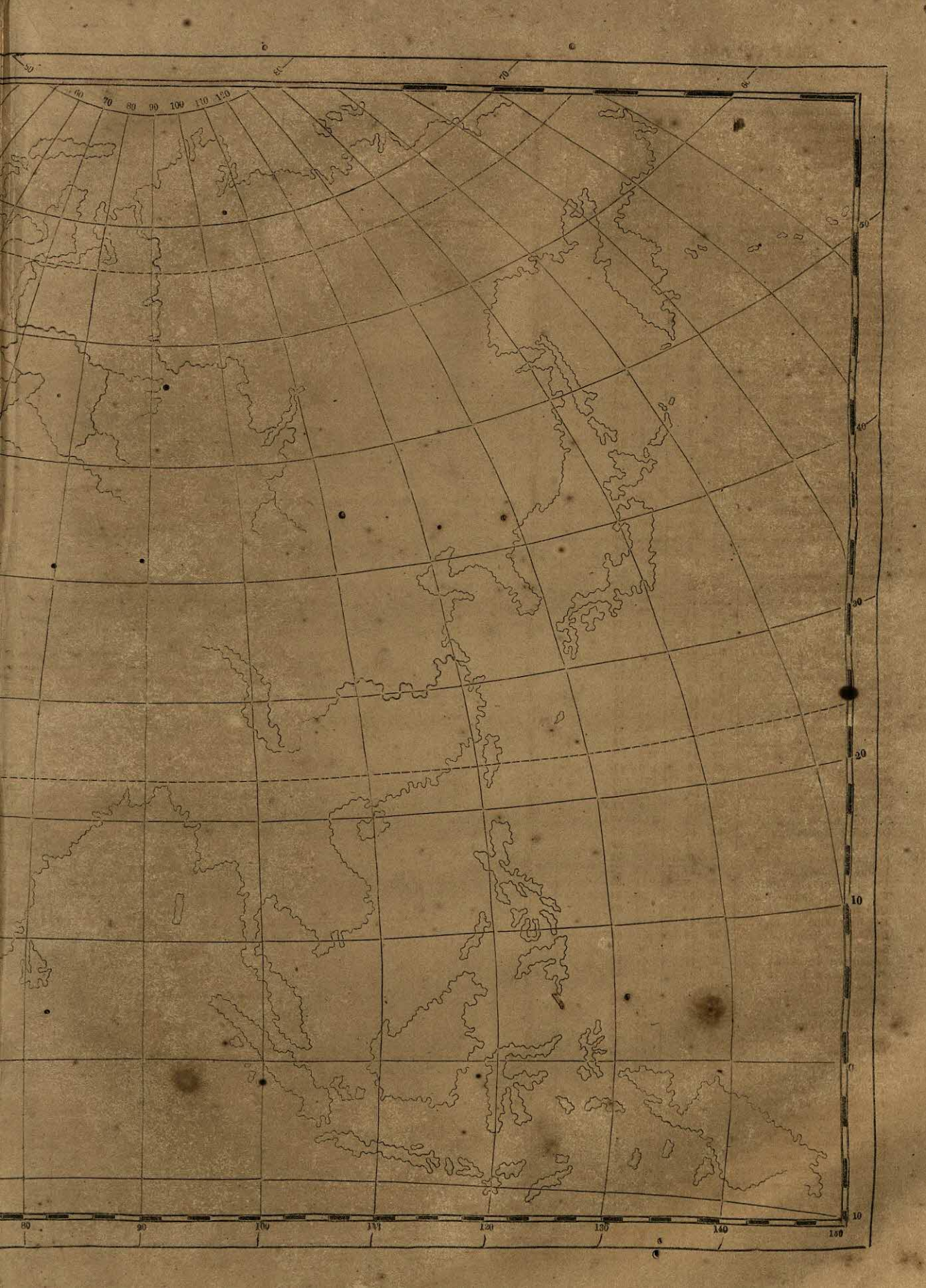
I saw the Duchess *Dowager's* carriage.
The Lord *Chancellor's* footman has come.
The keeper of the Privy Seal's house has been sold.
They went to Thompson and *Brothers'* the linen drapers.
I bought the article at Husband and *Son's*, the new tea-dealers.

Here, the *Duchess Dowager* is a compound title, and being taken together has but one *'s*, though consisting of two nouns. In *Thompson and Brothers'* the term shop or warehouse is understood; e. g. Call at *Henry's*, that is *Henry's house*, or *Henry's place of business*. Usage does not allow the *s* to be applied to explanatory nouns, as in the above *the linen drapers*, or *the new tea-dealers*; nevertheless, these nouns are in apposition, and consequently in the same case with the titles or names they explain.

MAP OF ASIA.

Names of Places.	Latitudes.		Longitudes.	
Acheen, Sumatra	5° 35	N.	95° 26	E.
Acre, Syria	32 55		35 6	
Aden Cape, Arabia	12 44		45 11	
Agimere, India	26 35		75 20	
Amoy, China	24 31		118 17	
Andaman Isle, Great	13 34		93 9	
Arcot, India	12 54		79 22	
Ava, Chin-India	21 44		95 50	
Banca Island, East Indies	1 53		105 52	
Banda Island, East Indies	4 31		130 0	
Bangalore, India	12 58		77 33	
Busheer, Persia	29 0		50 52	
Bussora, Turkey	30 29		47 10	
Calicut, India	11 15		75 50	
Cambay, India	22 24		72 30	
Cambodia R., Chin-India	9 35		106 20	
Canton, China	23 7		113 14	
Chusan, China	30 14		122 7	
Cochin, India	9 58		76 9	
Comorin Cape, India	8 5		77 35	
Damascus, Syria	33 20		36 45	
Diarbekir, Turkey	37 54		39 54	
Delhi, India	28 37		77 40	
Formosa Isle, China	25 11		121 56	
Foutcheou, China	26 0		116 2	
Gilolo Isle, East Indies	0 48		128 28	
Goa, India	15 28		73 56	
Graen, Arabia	29 23		47 58	
Hainan Isle, China	19 0		109 30	
Herat Afghanistan	34 48		62 25	
Hue-fo R., Chin-India	16 36		107 16	
Indus R., India	29 0		70 0	
Ispahan, Persia	32 23		51 50	
Jaffa, Syria	32 3		34 46	
Jidda, Arabia	21 27		39 15	
Krio Cape, Turkey	36 41		27 21	
Ladrone Isles, Guy's	20 30		145 46	
Lahore, India	31 25		74 19	
Macao, China	22 11		113 32	
Maldive Isle, India	4 10		73 42	
Manapar Pt., India	8 22		78 7	
Mangalore, India	12 51		74 53	
Martaban, Chin-India	16 32		97 37	
Masulipatam, India	16 10		81 12	
Medina, Arabia	25 0		39 40	
Minicoy, Laccadives	8 17		73 19	
Mocha, Arabia	13 19		43 17	
Muscat, Arabia	23 37		58 41	
Mussendom, Cape	26 23		56 35	
Nangasaki, Japan	32 44		129 52	
Nankin, China	32 5		118 47	
Nicobar Isle	6 45		94 0	
Ningpo, China	29 55		121 24	
North Cape, Russia	68 56		179 12	W.
Ochotck, Russia	59 20		143 13	E.
Orenburg, Russia	51 46		55 57	
Ormus, Fort	27 5		56 29	
Padang Head	0 56	S.	99 58	
Palmyra Point	9 49	N.	80 26	
Pelew Isles	8 9		134 50	
Pondicherry, India	11 56		79 54	
Quil n, India	8 53		76 38	
Romberg Cape	53 27		141 45	
Ruttunpour, India	22 16		82 36	
Saigon, Persia	10 50		106 43	
Samarcand, Turkestan	39 47		66 50	
Seringapatam, India	12 25		76 42	
Shanghae, China	31 10		121 10	
Shantung Promontory	37 26		122 9	45
Shiraz, Persia	29 30		52 35	
Singanfou, China	34 17		108 57	
Sinope, Turkey	42 3		35 10	
Suez, Arabia	29 57		32 37	
Surat, India	21 11		73 3	
Tarsus, Turkey	37 1		34 52	
Tellicherry, India	11 44		75 33	
Tenasserim, Chin-India	12 36		97 49	
Ternate Isle	0 50		127 32	
Tomsk, Russia	56 30		85 10	
Tonquin, Chin-India	20 57		105 50	
Tranquebar, India	11 3		79 55	
Trebizonde, Turkey	41 2		39 42	
Trincomalé, India	8 31		81 21	
Tripoli, Syria	34 26		35 51	
Tzour, or Tyre, Syria	33 17		35 15	
Visagapatam, India	17 43		83 26	
Yakutsk, Russia	62 2		129 43	
Yeniseisk, Russia	58 27		91 58	

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SKELETON MAPS.—No. III.

ASIA.

In this lesson, we present our students of geography with a skeleton map of Asia, similar to that which we formerly gave of Europe. We have annexed to this map, a list of the latitudes and longitudes of the most important places in this continent, excepting the capitals of the countries, kingdoms or states; of these capitals, we have already given the latitudes and longitudes, at p. 371, volume II. in our lesson in Geography No. XX.; so that it was unnecessary to repeat them here. By the combination of these two lists, the student will be enabled to fill up this skeleton map in a very satisfactory manner; and thus make himself well acquainted with the geographical positions of the most important cities, islands, and ports belonging to Asia. From the directions given in the explanation of the skeleton map of Europe, the student will be enabled to construct a *scale of latitudes* and a *scale of British miles* for himself. In the construction of the former scale, it will be necessary to make it flexible, in order to be able to apply it in the direction of the curved meridian lines which unite the corresponding degrees of longitude at the top and bottom of the map; and those also which may be conceived to be drawn between them, for every degree and minute of longitude. Perhaps, the easiest way to make such a scale flexible, would be to paste the paper draught of it on a piece of fine thin whalebone of the proper length, so that it may be bent at pleasure to the proper curve. The same thing indeed ought to be done for the skeleton map of Europe, as even in that map, the meridian lines are somewhat curved, and therefore the student ought to have a flexible scale for the purpose of laying down the latitudes correctly; but the degree of curvature is so small, that very little error is likely to take place in using a straight scale. The real fact is, that after all our attempts at accuracy in the laying down of places on a map according to their latitudes and longitudes, we are able only to reach a certain degree of approximation to the truth; and a practised eye, assisted by a correct judgment, will attain the object fully as well without a scale as with one, by exercising its power of determining the situation of places by inspection. This power will serve the student both in reading off the latitudes and longitudes, and in laying them down; so that he can readily transfer the positions of places from a filled-up map, to a skeleton map at once. There is, however, not much difference between the size of the scale of our filled-up maps and our skeleton maps; and in a rough outline or first attempt, they may be considered the same; but, in a second attempt, the difference between them must not be overlooked; as habits of accuracy are of essential importance to the geographical draughtsman. The principles of the construction of maps will be explained in future lessons.

LESSONS IN GEOGRAPHY.—No. XXV.

MAP OF NORTH AMERICA.

The principal *isthmus* in North America is that called the Mexican Isthmus which separates the waters of the Atlantic and Pacific oceans. At three different points do these waters approach each other. The isthmus of Panama or Darien, already mentioned, is the narrowest portion of this isthmian region; and at the narrowest point of this isthmus, the breadth of the land is only about 28 miles across, from ocean to ocean. The next isthmus in point of narrowness is that of Tehuantepec, which is reckoned 125 miles across the land from ocean to ocean; and the last, which is the broadest, is that of Guatemala or Chiquimula, which is reckoned about 170 miles across the land between the gulf of Honduras and the Pacific. The isthmus which separates New and Old California is upward of 100 miles broad. The isthmus of Florida is about 150 miles broad; that of Alaska may be about 50 miles, and that of Nova Scotia about the same.

The *mountains* and *plateaus* of North America are on a grand scale. The most extensive chain of mountains is that called the Rocky Mountains next the Pacific, which extend from north to south, or from the shores of the Arctic Ocean to the plateaus of Mexico, a distance of about 2,800 miles; and which vary in height from 3,000 feet to 10,000 feet above the level of the sea. The principal plateaus are the great basin of Utah, the highlands of Oregon, and the mountain range of California. The next chain is that of the Apalachian or Alleghany mountains, on the eastern side of the continent, next the Atlantic, and within the United States; these mountains extend from about the 34th parallel of latitude to the shores of the gulf of St. Lawrence, a distance of about 1,400 miles, their breadth on an average being about 120 miles. Their average altitude is about 2,500 feet; and the highest summits reach upwards of 6,000 feet. The Ozark mountains occupy a space about 300 miles long and 100 miles broad, and vary in height from 1,000 to 2,000 feet. The table-land in Labrador has an average height of 2,000 feet; but the Arctic highlands have a considerably less elevation. In the Mexican isthmus, the plateau of Chihuahua varies from 4,000 to 6,000 feet in height; and farther to the south the plateau of Anahuac varies from 6,000 to 9,000 feet in elevation. In this table-land there are several mountains, chiefly volcanic, which rise to an enormous height above the level of the sea, such as Jorullo, Popocatepetl and Orizaba. The altitude of Popocatepetl is 17,773 feet above sea-level, and is reckoned the highest peak in North America. The plateau of Central America extends from the isthmus of Tehuantepec to that of Panama, diminishing in height from about 5,500 feet to about 200 or 300 feet at its extremity. Between the mouth of the river Chagres on the Atlantic side, and the city of Panama on the Pacific side, the distance is about 42 miles; and the highest ground, on the proposed line of railway between these points, is less than 300 feet.

The rivers in North America are even on a grander scale than the mountains, as compared with those of the old world. The largest river in this continent is the Mississippi, which brings to the Atlantic the waters drained from a surface of more than a million of square miles. This river, which rises in the lake of Itasca, at the elevation of about 1,500 feet, flows in a southerly direction to its embouchure in the gulf of Mexico, a distance of about 2,400 miles. The longer branch of this river, called the Missouri, rises in the Rocky Mountains, and has a course of about 2,500 miles before it joins the Mississippi; so that the whole length of the river Mississippi by this great branch is upwards of 4,000 miles. This river is navigable from the sea to the falls of St. Anthony, a distance of about 400 miles from its source; and the Missouri is navigable from its junction with the Mississippi to the great falls at the base of the Rocky Mountains. Thus the navigation of the Mississippi exceeds a distance of 2,000 miles, and that of the Missouri, with the lower Mississippi, a distance of 3,000 miles. The Ohio, another tributary to the Mississippi, has a course of nearly 1,000 miles before it reaches the latter, and receives a considerable number of tributary rivers, among which the Tennessee is the largest, being nearly equal to the Ohio itself. The delta of the Mississippi, owing to the floods which occur among the tributaries and the principal branches, is annually inundated to a great extent from its banks, and is frequently the cause of very serious changes and loss to the neighbouring country.

The next river of importance and magnitude is the St. Lawrence; the source of this river is the St. Louis, which flows into the *Lake* Superior; this lake is connected, like a chain, with Lakes Huron, Erie, and Ontario, through all of which the river runs, and, escaping from the latter, receives the name of the St. Lawrence; it then flows in a channel of about 700 miles in length, forming between Quebec and the sea a broad estuary, which increases from twenty-five miles to upwards of 100 miles at its embouchure. The whole length of the St. Lawrence is consequently about 2,000 miles. This river is navigable to the Rapids, near Montreal. On the channel between Lakes Erie and Ontario, a distance of about forty miles, occur the Falls of Niagara, 162 feet in depth, the most remarkable in the world for extent and sublimity. In the northern regions of the North American continent, occur several rivers of considerable extent: the Nelson, about 1,400 miles; the Churchill, about 900 miles; the Mackenzie, upwards of 2,000 miles; the Coppermine River, and others, whose lengths are not yet determined. On the eastern coast of this continent are a number of rivers, whose average length is about 400 miles; such as the Connecticut, the Hudson, the Delaware, the Susquehanna, the Potomac, the Savannah, &c., all of which flow into the Atlantic. On the western side of the continent, and flowing into the Pacific, are the following, with their estimated lengths:—The Columbia, 750 miles; the Sacramento, 420 miles; and the Colerado,

840 miles. The Rio del Norte, about 1,400 miles long, falls into the Gulf of Mexico.

Of the *lakes* in North America, the largest are those in the line of the St. Lawrence, viz. Superior, Huron, Michigan, Erie, and Ontario, which, taken together, are estimated to cover a surface of nearly 100,000 square miles. These lakes are situated upon a succession of terraces, rising one above another. Ontario, at a height of 234 feet above the level of the sea, covers about 13,000 square miles; Erie, at a height of 565 feet, about 11,000 squars miles; Huron, at a height of 595 feet, about 17,000 square miles; Michigan, about the same height, nearly 14,000 square miles; and Superior, at the height of 627 feet, about 43,000 square miles.

The other lakes of North America are very considerably smaller; those in the northern part of this continent being Lakes Winnipeg and Athabasca, the Great Slave and Great Bear Lakes, the Deer Lake, Lake Wollaston, &c., covering altogether a surface of about 30,000 square miles. To the west of the Rocky Mountains are the Great Salt Lake and Lake Utah; in the Mexican table-land and isthmus, Lake Chapala, Lake Nicaragua, and Lake Managua, covering a space of about 1,600 square miles.

Having finished our description of the map of North America, it may be interesting to discuss a little more fully the nature of the varieties in the different races of men. Both in his organisation and his mode of living, man in every age and in every place presents an assemblage of common characteristics, which express the unity of the human type. Nevertheless, there do exist individuals of the human race possessing such remarkable differences in these characteristics, that they cannot be attributed to mere accident; seeing that they have evidently been perpetuated from one generation to another in distinct races or tribes. Of all the differences which men present in their organisation, the most striking is that of the colour of the skin. Between the white and rosy tint of the European face and the black hue of the African visage, the difference is so overwhelming, that at first sight, the natives of the two continents, separated only by a distance of thirteen miles, appear to belong to two wholly different races of animals. When we add to this, the difference between the upright and lofty physiognomy of the former, and the oblique and depressed physiognomy of the latter, we cannot much wonder at the cruel subjugation to which the negro has been exposed for ages, and by which he has been abstracted, as it were, from the common humanities of the race.

The black colour of the skin is due to the existence of a dense and compact layer of polygonal cellules [little cells] containing a black pigment [paint or colouring matter] below the epidermis [the *scarf-skin* of the body]. These pigmentary cellules do not exist under the skin of the white man, except perhaps in accidental spots, and do not appear in his skin, even when it assumes a tint more or less brown under the influence of the light and heat of the sun. Moreover, when the negro is transferred to the milder or colder climates of Europe, these cellules do not disappear from his skin. The existence of this black pigmentary matter under the skin, therefore, constitutes a permanent difference, which, in an organic point of view, establishes one distinctive mark of the Ethiopian race, such as the negroes of Africa, and the Papuans of Oceanica. It has been observed that there is a constant relation in point of colour, which exists between the skin and the hair, and which includes also the iris or circular ring surrounding the pupil of the eye. Among the white race, there are two classes; the blonds, or flaxen-coloured, which have a white skin, fair hair, and blue eyes; and the browns or brunettes, who have a brown skin, black hair, and black eyes. This relation is most distinctly manifested in the case of the Albinos, who are characterised by the whiteness of their hair and skin, and the discoloration of the iris, which borrows its red colour from the blood of its numerous vessels. This relation is also confirmed by the particular qualities of the hair, among the black race, which is woolly, that is, very short and crisp, as among the negroes of Africa; or short, curled and rough, as among the negroes of Oceanica. Between the two extremes exhibited in the European blond and the African black, the colour of the skin and the length and quantity of the hair, present among individuals of the same nation, and among different people of the same race, all imaginable shades and degrees of difference. Moreover, there are very remarkable differences between the two great races of men,—the American, distinguished by black hair, straight and thin, with a coppery colour of the skin; and the Mongolian, inhabiting Asia, with similar distinctions in the hair, but a yellowish tinge in the skin.

The head of man presents differences as numerous and as important as those which relate to the skin, especially in the size and form of the skull, which approaches more or less to those of the ideal type of the race. Whatever may be the nature of the controversy which tends to invalidate the doctrine of the ratio between the size of the brain and the power of intelligence which it possesses, it is an undeniable fact that organic difference in this respect gives a sure test of intellectual capacity among the individuals of the human race. The brain is still considered the organ of thought, and intellectual power is found to vary with the size of this organ. For want of a rigorous method of determining the weight of the brain, the determination of its volume by the measurement of the skull, may be considered as presenting a sufficiently exact approximation to the truth. But as the different portions of the brain have not the same relative importance, the upper part being considered the organ of the soul, and the anterior part of this more particularly the organ of the understanding, it is supposed that the form of the skull, which exhibits to a certain extent the relative degree of the development of the different parts of the brain, must have a certain ratio to the development of the intellectual faculties; that the height, the breadth and the width of the anterior part of the skull constitute the index of a corresponding development of intellectual power; and that, thus, the form of the forehead possesses, as a physiognomical standard, the value which has been attributed to it by common observation in all ages, up to the remotest antiquity. *(To be continued.)*

LESSONS IN GERMAN.—No. LI.

§ 12. Declension of common nouns.

(1) In German there are two declensions, distinguished as the *Old* and the *New*. The characteristic of each is the termination of the genitive singular. In the former, the genitive is formed from the nominative by adding es or s, when the genitive is otherwise formed, the noun is of the new declension.

(2) To the old declension belong almost all masculine and neuter nouns; that is, by far the greater part of all the nouns in the language.

(3) In both declensions, the nominative, genitive and accusative plural are alike in form; while the dative terminates always in the letter n. Unless, therefore, the word declined already ends in that letter, it is, in the dative, uniformly assumed.

(4) All *feminine* nouns are invariable in the singular; in the plural, they are, for the most part, inflected according to the new declension.

(5) In compounds, the *last* word only is subjected to the variations of declension.

§ 13. The old declension.

TERMINATIONS

	Singular.	*Plural.*
Nom.	——.	——e.
Gen.	——es or s.	——e.
Dat.	——e (or like Nominative).	——en.
Acc.	——.	——e.

In the genitive singular the e is frequently omitted before s, when the elision does not cause an unpleasant sound: as, des Königs, of a king; des Monats, of a month; des Jahrs, of a year Also the e of the dative is often dropped: as, dem König, to a king; and is never used when a preposition stands before the substantive without an article, pronoun or adjective preceding: as, mit Beifall, with approbation; mit Sturm, by storm; mit Fleiß, on purpose; von Silber, of silver.

Examples.

	Singular.	*Plural.*
N.	der Berg, the mountain.	die Berge, the mountains.
G.	des Berges, of the mountain.	der Berge, of the mountains.
D.	dem Berge, to the mountain.	den Bergen, to the mountains
A.	den Berg, the mountain	die Berge, the mountains.

(1) Some nouns of this declension take the letter r after e in all cases of the plural, and assume the Umlaut, if the radical vowel be capable of it. (Sect. II. 12. Ae, &c.).

EXAMPLES.

Singular.	*Plural.*
N. das Dorf, the village.	die Dörfer, the villages.
G. des Dorfes, of the village.	der Dörfer, of the villages.
D. dem Dorfe, to the village.	den Dörfern, to the villages.
A. das Dorf, the village	die Dörfer, the villages.
N. das Lied, the song.	die Lieder, the songs.
G. des Liedes, of the song.	der Lieder, of the songs.
D. dem Liede, to the song.	den Liedern, to the songs.
A. das Lied, the song.	die Lieder, the songs.

The nouns of this form (e + r) in the plural, among which are all substantives ending in thum, as, der Reichthum, riches, are for the most part neuters: as,

Aas, carrion.	Gespenst, spectre.	Lamm, lamb.
Amt, office.	Glas, glass.	Lied, song.
Bad, bath.	Glied, member.	Loch, hole.
Blatt, leaf.	Grab, grave.	Maul, mouth.
Buch, book.	Gras, grass.	Nest, nest.
Dach, roof.	Gut, good.	Pfand, pawn.
Dorf, village.	Haupt, head.	Rad, wheel.
Ei, egg.	Haus, house.	Reis, twig.
Faß, vat, tub.	Huhn, hen.	Rind, cattle.
Feld, field.	Kalb, calf.	Schloß, castle.
Geld, money.	Kind, child.	Schwert, sword.
Gemüth, mind.	Kleid, dress.	Volk, people.
Geschlecht, species.	Korn, corn.	Weib, woman.
	Kraut, herb.	

The following nouns of this form are masculine:

Bösewicht villain.	Leib, body.	Vormund, guardian.
Dorn, thorn.	Mann, man.	Wald, forest.
Geist, spirit.	Ort, place.	Wurm, worm.
Gott, God.	Rand, margin	

(2) Most nouns of this declension, whose radical vowel is a, o, u, or au, assume, in the plural, the Umlaut. Thus: Hand, Sohn, Buch, Haus, make their plurals as follows:

EXAMPLES.

Feminine.	*Masculine.*
N. die Hände, the hands.	die Söhne, the sons.
G. der Hände, of the hands.	der Söhne, of the sons.
D. den Händen, to the hands.	den Söhnen, to the sons.
A. die Hände, the hands.	die Söhne, the sons.
Neuter.	*Neuter.*
N. die Bücher, the books.	die Häuser, the houses.
G. der Bücher, of the books.	der Häuser of the houses.
D. den Büchern, to the books.	den Häusern, to the houses.
A. die Bücher, the books.	die Häuser, the houses.

The words in which the Umlaut thus occurs, are chiefly 1. primitive nouns of the masculine gender; 2. feminines which have their plural in e, as also, Mutter and Tochter; 3. neuter primitives having their plurals in (e + r) er; 4. and lastly, nouns adding the diminutive terminations chen and lein.

(3) Nouns ending in el, en, er, chen and lein, reject the vowel e of inflection in all cases, both singular and plural; so that those in el and er merely affix s to the genitive singular and n to the dative plural, while those in en, chen and lein assume nothing beyond the s in the genitive singular.

EXAMPLES.

Singular.	*Plural.*
N der Vogel, the bird.	die Vögel, the birds.
G. des Vogels, of the bird.	der Vögel, of the birds.
D dem Vogel, to the bird.	den Vögeln, to the birds.
A. den Vogel, the bird.	die Vögel, the birds
N. der Degen, the dagger.	die Degen, the daggers.
G. des Degens, of the dagger.	der Degen, of the daggers
D dem Degen, to the dagger.	den Degen, to the daggers.
A. den Degen, the dagger.	die Degen, the daggers.
N. der Bürger, the citizen.	die Bürger, the citizens.
G. des Bürgers, of the citizen.	der Bürger, of the citizens.
D. dem Bürger, to the citizen.	den Bürgern, to the citizens.
A. den Bürger, the citizen.	die Bürger, the citizens.

Singular.	*Plural.*
N das Büchlein, the little book.	die Büchlein, the little books.
G. des Büchleins, of the l. book.	der Büchlein, of the little books.
D. dem Büchlein, to the l. book.	den Büchlein, to the little books.
A. das Büchlein, the little book.	die Büchlein, the little books.
N. das Sönchen, the little son	die Söhnchen, the little sons.
G. des Sönchens, of the little son	der Söhnchen, of the little sons.
D. dem Sönchen, to the little son.	den Söhnchen, to the little sons.
A. das Sönchen, the little son.	die Söhnchen, the little sons.

(4) Some *feminine* nouns are, in the plural, varied according to this declension; especially those ending in the suffix niß.

EXAMPLES

Singular.	*Plural.*
N die Maus, the mouse.	die Mäuse, the mice.
G. der Maus, of the mouse.	der Mäuse, of the mice.
D. der Maus, to the mouse.	den Mäusen, to the mice.
A. die Maus, the mouse.	die Mäuse, the mice.
N. die Kenntniß, the knowledge.	die Kenntnisse.
G. der Kenntniß, of the knowledge.	der Kenntnisse.
D. der Kenntniß, to the knowledge.	den Kenntnissen.
A. die Kenntniß, the knowledge.	die Kenntnisse.

To this class, belong the nouns in the following list:

Angst, anguish.	Haut, skin.	Nath, seam.
Ausflucht, evasion.	Kluft, gulf.	Noth, distress.
Axt, ax.	Kraft, force.	Nuß, nut.
Bank, bench.	Kuh, cow.	Sau, sow.
Braut, bride.	Kunst, art.	Schnur, string.
Brust, breast.	Laus, louse.	Stadt, city.
Faust, fist.	Luft, air.	Wand, wall.
Frucht, fruit.	Lust, delight.	Wulst, tumour.
Gans, goose.	Macht, power.	Wurst, sausage.
Gruft, tomb.	Magd, maid servant.	Zunft, guild.
Geschwulst, swelling.	Maus, mouse.	Zusammenkunft, meeting.
Hand, hand.	Nacht, night.	

§ 14. THE NEW DECLENSION.

TERMINATIONS.

Singular.	*Plural.*
Nom. ——.	——en or n.
Gen. ——en or n.	——en or n.
Dat. ——en or n.	——en or n.
Acc. ——en or n.	——en or n.

NOTE.—When the singular ends in e, el, ar or er, the plural takes n only.

EXAMPLES.

Singular.	*Plural.*
N. der Graf, the count.	die Grafen, the counts.
G. des Grafen, of the count.	der Grafen, of the counts.
D. dem Grafen, to the count.	den Grafen, to or for the counts.
A. den Grafen, the count.	die Grafen, the counts.
N. der Falke, the falcon.	die Falken, the falcons.
G. des Falken, of the falcon.	der Falken, of the falcons.
D. dem Falken, to the falcon.	den Falken, to the falcons.
A. den Falken, the falcon.	die Falken, the falcons.

(1) Feminine nouns which are indeclinable in the singular are, for the most part, of this declension. Those ending in the suffix in, in the singular, double the n in the plural. These last are, also, often written with the double n in the singular: as, Heldin, a heroine.

EXAMPLES.

Singular.	*Plural.*
N. die Schuld, the debt.	die Schulden, the debts.
G. der Schuld, of the debt.	der Schulden, of the debts.
D. der Schuld, to the debt.	den Schulden, to the debts.
A. die Schuld, the debt.	die Schulden, the debts.
N. die Hirtin, the shepherdess.	die Hirtinnen, the shepherdesses.
G. der Hirtin, of the shepherdess.	der Hirtinnen, of the shepherdesses.
D. der Hirtin, to the shepherdess.	den Hirtinnen, to the shepherdesses.
A. die Hirtin, the shepherdess.	die Hirtinnen, the shepherdesses.

Mutter, mother, and Tochter, daughter, are the only feminine nouns that have the terminations of the Nom. Gen. and Acc. plural like the singular. They add n to the dative.

Feminine nouns, it will be remembered, have no variations of declension in the *singular*. As exceptions to this rule, however, some examples remain (vestiges of the ancient mode of declension), in which the Gen. and Dat. appear under the government of a preposition and varied by terminations. Thus: mit or in Ehren, with or in respect or honour: Ehren from Ehre; auf Erden, on earth: Freuden from Freude; with joy: von or auf Seiten, on the part of: Seiten from Seite.

The endings of the Genitive is sometimes, also, retained, when the word is under the government of a noun succeeding. Thus, Dies iſt meiner Frauen Schweſter, this is my wife's sister.

LESSONS IN LATIN.—No. LIII.

By JOHN R. BEARD, D.D.

VERBS GOVERNED BY VERBS.

VERBS may govern verbs. A verb governs another verb when the second verb is dependent on the first. The simplest case of verb-government is that which is expressed in the general form or rule:—

One verb governs another in the infinitive mood, e. g.

Caesar *maturat* ab urbe *proficisci*.
Cæsar hastens to go from the city.

Where proficisci in the infinitive mood is governed by maturat. The infinitive mood, which represents in the abstract the action described in the verb, may be considered as equivalent in meaning to a noun, and so appear as the object of the verb. Thus, instead of the infinitive we might have a noun, e. g.,

Caesar maturat *profectionem* suam.
Cæsar hastens his departure.

The infinitive may be the subject of a verb as well as the object, e. g.,

Humanum est *errare*.
To err is human.

Errare is the subject to est; in sense errare is nearly the same as the noun error.

A noun may accompany the infinitive whether it is the subject or the object, e. g.,

SUBJECT. *Homines errare* non mirum est.
For men to err is not wonderful.
OBJECT. Scio *ducem* esse fortem.
I know that the general is brave.

Observe how the English construction differs from the Latin, and you will see that the connecting particle *that* employed in English has nothing to correspond with it in Latin; equally the indicative mood in English is represented by the infinitive mood esse in Latin.

Should the infinitive be accompanied by an adjective, noun or pronoun intended to complete the meaning, the accompanying word must agree with the subject, if it is to be taken with the subject; and with the object, if it is to be taken with the object, e. g.,

SUBJECT. Coepi tibi *molestus esse*.
I began to be troublesome to thee.
OBJECT. Jubeo *te* esse *fortem*.
I command thee to be brave.

If the verb governs a dative case, the accompanying word or words may be in the dative, e. g.,

Mihi negligenti esse non *licet*.
I must not be negligent.

I may exhibit a similar construction with an accusative:

Me negligentem esse non licet.
It is not proper for me to be negligent.

A few verbs govern a subjunctive mood.

This construction must be distinguished from the construction in which a subjunctive mood is connected with a verb in the indicative mood together with a conjunction. In the construction now before us there is no conjunction; at least none is expressed, though in all probability the construction is elliptical, e. g.,

Magnum *sic* animum *habeas*.
Take care to keep a high mind.

That ut was originally used in such constructions may appear from its still continuing to be occasionally employed, e. g.,

Cura *ut* valeas.
Take care to keep well.

The verbs with which the construction is found, are volo, malo, nolo, curo, censeo, permitto; also, oro, quaeso, rogo, precor, postulor, peto, hortor, suadeo, moneo, mando, decerno; and again the imperatives, fac, cura, having the force of our *do*, or *be sure to do*, *take care that you*, &c. Volo, &c. may stand in the subjunctive, having the force of a kind of softened command or wish, e. g.,

Diligens *sis* velim.
I should like you to be industrious.

Indeed both constructions occur, e. g.,

ACCUSATIVE. Licet *Themistoclem* esse *otiosum*.
It is permitted that Themistocles be idle.
DATIVE. *Themistocli* licuit esse *otioso*.
It was permitted to Themistocles to be idle.

Let the reader study these forms.

1. Cicero scripsit librum.
Cicero wrote a book.
2. Cicero scripsisse librum dicitur.
Cicero is said to have written a book.
3. Ciceronem scripsisse librum constat.
It is agreed that Cicero wrote a book.

In 1. Cicero is the subject to scripsit; in 2. Cicero is the subject to dicitur, and scripsit is changed into scripsisse, which is governed by dicitur; in 3. the nominative Cicero has become the accusative Ciceronem, which is the accusative case before the infinitive scripsisse, and both the infinitive and its accusative are governed by the impersonal verb constat.

Instead of the infinitive with the accusative, some verbs take also the indicative with quod. e. g.,

Gaudeo te valere, *or*
Gaudeo quod vales.
I am glad that you are well.

In this case the quod is the relative pronoun, the object to the verb gaudeo, thus I rejoice at this (namely) that you are well; quod in such instances as the present is commonly called a conjunction, and as a conjunction may it here be regarded; not the less is it traceable to the relative force which is its essential meaning, of our *that* and of our *because* (be (by) and cause) similar remarks may be made. In all his linguistical studies let the reader habituate himself to the scrutiny of what the Germans call Wortbildung, i. e. *wordformation*, as he will thence be kept from mere routine, mere memory-work, mere verbalism, and acquire that discipline of mind for which the study of languages is chiefly valuable.

The free use of the infinitive after adjectives, as, *I am willing to go*, is unknown in Latin. Yet, especially in the poets, the infinitive is sometimes found after adjectives, and for the most part in cases where the gerund might be employed or would be more proper. Thus the infinitive may be found as dependent on the adjectives, paratus, suetus, adsuetus, consuetus, insuetus, promptus, e. g.,

Maesta civitas fuit, *vinci insueta*.
The city, unused to be conquered, was sad.

Cornelius Nepos has the phrase paratus est facere, which might stand thus, paratus est ad faciendum. Both Cicero and Caesar, however, use an infinitive after facere.

CICERO: Id *quod parati* sunt facere.

CAESAR: Paratos esse *et obsides* dare et imperata facere.

The construction with ad and the passive participle in dus also occurs in Cicero and Caesar, e. g.,

CICERO: Ad permovendos animos instructi et *parati* sunt.

CAESAR: Paratiores ad omnia pericula subeunda.

Not only in moods but in tenses has one verb an influence on another, in which case, the latter may be said to be governed by the former. The facts connected with the influence which the tense of one verb has on the tense of another verb combine to form the doctrine of what, in grammatical language, is called the consecutio temporum, or the *sequence of the tenses*. In the nature of things, a certain tense comes properly after another, and a certain other tense does not

come properly after another; for instance, it is sense to declare, *I hear what you say*, but not sense to declare *I hear what you said*, it being supposed that in both cases the time remains present. Instead of *I hear what you said*, the sense requires *I hear what you say*; or if a past act is intended, then we may declare *I heard what you said*. You thus see that the tense of the latter verb is governed or determined by the tense of the former verb. The former verb is independent of the latter, and the latter verb is dependent on the former; so that it may be laid down as a general fact or law that the tense of the dependent verb is determined by the tense of the independent verb. Of course there must be two verbs, and consequently two sentences. Of these sentences the one may be called *dependent*, the other *independent*. The verb of the dependent sentence has its tense determined by the verb in the independent sentence. The one must correspond or agree with the other.

The remarks imply that the time intended by the two verbs is the same. There must be two different tenses, if the time intended is different. Thus in the sentence

Nummos collegisse juvat.
Having much money is pleasant.

the act is past, the feeling is present; consequently one verb is in the *perfect*, the other verb is in the *present*, so in the sentence

Se venisse dicit.
He says that he came.

What is declared is not that the man affirms *he is coming*, a sense that would require the present *venire*, but that *he came*, venisse.

These general grammatical truths are recognised in Latin, but recognised under some qualifications. A few particulars are all that can here be given. A *present* then follows a *present* tense. A *present* also follows a *future* tense, when the dependent verb is in the subjunctive mood, for the Latins have no *future subjunctive*. If the independent verb is a *preterit*, the dependent verb must be a *preterit subjunctive*. But in Latin the preterit, for instance, docui has two significations, for docui means either *I taught* or *I have taught*; in the first an act is spoken of as merely and absolutely past, this is called an *aorist*, that is an *undefined past tense*, or a past tense unlimited as to particulars, whether past in relation to another past act, or in relation to a present act. But docui in the sense *I have* taught has a relation to the present time, I have *recently* taught, indicating an act which in itself or its consequences comes down to or near to the present time. Now when you wish to know what tense to put after docui a preterit, you must learn whether or not the verb is used in the *aorist* or *indefinite sense*, or in the sense of a *perfect-present*. If the *preterit* or *perfect* is a perfect present, then the dependent verb will be a *preterit-subjunctive*; if the *preterit* is employed as an *aorist*, then the dependent verb or verbs must be in the *imperfect* or the *pluperfect*. The preterit used as an *aorist* is called the *historic preterit*, or the *preterit of narration*, because it is employed in historical narrative, whose general office it is to speak of the past indefinitely, that is simply as past. The following tables will exhibit the chief facts of the

CONSECUTIO TEMPORUM.

PRES. video PERF. PRES. vidi 1st FUT. videbo 2nd FUT. videro	quid agas, or quid egeris.	IMP. videbam AORIST vidi PLUP. videram	quid ageres, or quid agisses.
PRES. rogo PERF. PRES. rogavi 1st FUT. rogabo 2nd FUT. rogavero	ut scribas	IMP. rogabam AORIST rogavi PLUP. rogaveram	ut scriberes
PRES. Hoc ideo facio PERF. PRES. Hoc ideo feci 1st FUT. Hoc ideo faciam 2nd FUT. Hoc ideo fecero	ut intelligas	IMP. Hoc ideo faciebam AORIST Hoc ideo feci PLUP. Hoc ideo feceram	ut intelligeres.

After the *imperative* stands the *present* or the *future*, e. g.,

Scribi mihi quid agas, or quid egeris; cura ut valeas.

Another tabular view or two may be useful; thus:

Nemo ita caecus est Nemo ita caecus fuit Nemo ita caecus erit Nemo ita caecus fuerit	ut non intelligat, or non intellexerit.	Nemo ita caecus erat Nemo ita caecus fuit Nemo ita caecus fuerat	quin non intelligeret, or non intellexisset.

Nemo est Nemo fuit Nemo erit Nemo fuerit	qui non intelligat, or non intellexerit.	Nemo erat Nemo fuit Nemo fuerat	qui non intelligeret, or non intellexisset.

In the *periphrastic conjugation* there is a future subjunctive. The periphrastic conjugation, the student may remember, consists of a periphrasis (hence the name) or circumlocution;—thus, amaturus sum is *I am about to love*. Instead of the indicative sum we may use sim, essem, &c. This periphrastic subjunctive is subjected to the general rules already laid down, e. g.,

Nemo est Nemo fuit Nemo erit Nemo fuerit	qui non intellecturus sit.	Nemo erit Nemo fuit Nemo fuerat	qui non intellecturus esset.

In English, we often put a future tense after a present; thus we say, *If I go I shall see your brother*. In reality the subjunctive clause, *if I go*, implies a future action. In Latin, the future is expressed, for if the independent verb is future, so also must the dependent verb be, and vice versa, e. g.,

Tunc erimus beati, quum cupiditatum erimus expertes.
Then shall we be happy when we shall be (are) free from desires.
Ut sementem feceris, ita metes.
As you shall have sowed (as you sow) so shall you reap.
Dicam si potero.
I will say if I shall be able (if I am able).
Ego vero, si potuero, faciam vobis satis.
But if I shall be able (if I am able) I will satisfy you.

In the preceding instance, video quid agas, you see another example of the dependence of one verb on another for its mood as well as its tense, and of the way in which the dependent verb is put in the subjunctive mood by the independent verb, or the verb in the indicative mood. This, however, is not a case of the mere dependence of one verb on another, since the relative quid is interposed. Other words are interposed in a similar manner, as in rogo ut scribas, just given. These interposed words are either relatives or conjunctions. Their effect in government will best be considered separately.

VOCABULARY.

Simulac (simul *together*, ac *and*), *as soon as*; Pelopidas, ae, m. *Pelopidas*; absumptus (ab and sumo) *taken away, destroyed*; rudis, e, *uncultivated*; segnitia, ae, f. *idleness, sloth*; vaco, 1. *I am at leisure*; non vacat mihi, *I have not leisure*; concedo, concessi, 3. *I grant, yield*; hoc ipsum nihil agere, *this very thing, namely, doing nothing*; nolite id velle, *do not wish, be sure not to wish*; fac ut, *take care to*; utinam, *O that! would that! may that!* velim mihi ignoscas, *would that you would pardon me!* fere, *almost*; his fere verbis, *words to this effect*; domos plur. aedifi. cur. *he had many houses built*,—this form is more usual than the infinitive after curo.

EXERCISES.—LATIN-ENGLISH.

De republicâ nihil habeo scribere; haec dicere habui; vincere scis, Hannibal, victoriâ uti nescis; Pelopidas non dubitavit, simulac conspexit hostem, confligere; Saguntum pergunt ire; solent diu cogitare omnes qui magna negotia agere volunt; Mil ades insulas ad officium redire coegit; Postumio negotium dabatur videre ne quid respublica detrimenti caperet; Domitianus bibliothecas incendio absuma reparare curavit; armis disceptari coeptum est; valere malo quam dives esse; rudem esse in poetis segnitiae est; licet mihi esse beato; prohibeo te quiescere; permitto tibi tacere; illis timidis et ignavis licet esse; infirmo non vacat esse mihi; mediocribus esse poetis non homines concessere; docto homini vivere est cogitare; ingenuas didicisse fideliter artes emollit mores; labi autem, errare, nescire, decipi et malum et turpe (esse) ducimus; hoc ipsum, nihil agere, delectat me; vivere ipsum turpe duco; nolite id velle quod fieri, non potest; noli te oblivisci Ciceronem esse; fac ut in alium diem differas; si quid acciderit novi facies ut sciam; utinam ut culpam sic etiam suspicionem vitare potuissem; utinam tam facile vera invenire possem quam falsa convincere; nollem accidisset tempus in quo perspicere posses quanti Pompeium, quanti Brutum facerem; velim mihi ignoscas; quicquid veniet in mentem scribas velim; senatus decrevit darent operam consules ne quid respublica detrimenti caperet; me ipsum ames oportet non mea; homini necesse est mori; ex rerum cognitione efflorescat oportet oratio; praetereo quod hanc sibi domum sedem elegit; tempus est majora canari; consilium coepit, hominis propinqui fortunas funditus everteres; paratus sum ad navigandum; illi sunt omnia perpeti parati; ad fluctum aiunt declamare solitum Demosthenem; morati melius erimus quum didicerimus quae

natura desideret; Plato si modo interpretari potuero, his fere verbis utitur; ut voles me esse, ita ero; domos plurimas aedificandas curavit.

ENGLISH-LATIN.

I have nothing to write concerning thy brother; we know that God is (exists); it is agreed (constat) that Demosthenes uttered many words; I know what thou sayest; I know what thou art about to say; I shall know what thou sayest; the king condemned what the pirate did; my father has condemned what you said; I wish (malo) to *be* rather than to *seem* good; they have not leisure to gather money; thy sister wishes to appear (videri) learned; I know that Tully is eloquent; they know that their father has gone away; they do not know when their sisters will return; they did not know when their sisters would return; they see what thou doest; no one was so blind as not to see what thou didst.

LESSONS IN MECHANICS.—No. XV.

ROAD-MAKING AND PUBLIC WORKS—(*continued*).

TUNNELS.

ROAD-MAKERS, ancient and modern, have other difficulties to contend with in extending their highways beside the passage of rivers. It sometimes happens that, to prevent a long and tedious journey over a mountain or skirting its base, a tunnel piercing the obstruction serves to carry the road from one side to the other with ease and expedition. We have grown familiar with tunnels in our railway works, but they were known long before locomotives were invented, or, as the saying is, thought of. The old Roman road-makers, who carried their highways over the whole world, who spanned the broadest rivers and valleys by bridges and viaducts, were not ignorant of tunnelling, and never turned back in dismay at the sight of a mountain. They bored mountains; they bored under the sea. It is reported that there was a tunnel which conveyed water to Samos, several thousand feet in length; there was a tunnel under an arm of the sea at Marseilles, wider and longer than the tunnel under the Thames. There was a tunnel more than half a mile long on the road from Naples to Puzzuoli. And there were several drainage tunnels, of various lengths, but all ably constructed, built on scientific principles, triumphs of engineering skill. What was there in the whole world those old victorious Romans failed to accomplish?

In England, canal tunnels were well known long before railways were heard of; there was a tunnel on the Thames and Severn Canal, two miles and a half in length; there is the Marsden Tunnel, on the Huddersfield Canal, more than three miles in length. The Thames Tunnel is one of those works which has excited a great deal of attention; and the history of its construction is full of interest.

As far back as the year 1802 a project was set on foot for opening an archway under the Thames, between Rotherhithe and Limehouse. The engineer was an experienced Cornish miner, and after making some experiments, he reported that he was firmly persuaded the undertaking would not cost so much as had been conceived. A subscription was in consequence raised, and a company was formed, under the denomination of the "Thames Archway Company." When the actual work was commenced, difficulties presented themselves, against which the engineer was unable to contend. He, and others with him, laboured on ineffectually for seven years, and the work was then given up.

Many years afterwards Mr. Brunel was prevailed upon to turn his attention to the subject. Notwithstanding that the early efforts had signally failed, they had resulted in evidence indicating that, by beginning the bore in the stratum of dry sand, and keeping close under the stratum of clay forming the bottom of the river, there was space enough to effect the object, although the nature of the intervening ground had been ascertained to be very loose in many places. "All the information obtained from the miner's report," says a writer on this subject while the tunnel was in progress, "concurred with the opinion of geologists in pointing out that the most eligible line of the tunnel was to keep as near to the bottom of the river as the security of the work would admit. The first idea of the plan which occurred to the engineer, best calculated for making an excavation fit for this object, under so overwhelming a head of water, was suggested by the sight of a piece of a keel of a ship, which had been eroded by the operations of the worm called the teredo. From this he conceived it practicable, as his specification describes it, to make a circular opening of sufficient capacity at once. However, of the two modes which he described he gave the preference to that of proceeding by forming simultaneously several contiguous excavations by means of an apparatus which has been denominated the shield. This shield, upon the whole, partakes of the character of a powerful cofferdam, applied in a horizontal instead of the vertical direction. It consists of twelve parallel frames lying close to each other, like so many volumes in a bookcase. Each frame being nearly 22 feet in height, is divided into three storeys; the whole presents therefore 36 openings, or cells. It is from these cells that the miners, operating by small quantities at a time, like so many teredos, are able to erode the ground in front, while others at the back bring up a substantial incrustation—namely, the brick structure. For locomotive action, each frame is provided with two substantial legs, resting on equally substantial shoes (not unlike snow shoes); these legs are provided with articulations that fit the frames for a pacing movement." By the aid of this singular apparatus, the work of the Thames Tunnel was finally completed.

In ordinary tunnel-making through a mountain or cliff, the plan is for the men to make a cutting at each end, until they butt up against the hill through which the tunnel is to be made; they then commence, by blasting and digging, sometimes only by the latter, the bore of the tunnel, making shafts to the surface to admit light and air, and to be used very often as outlets for the rubbish. Most of this is done by manual labour, with sheer muscular energy wielding pick and shovel; the introduction of gunpowder in the blasting of the rock is a method of facilitating the work, which has its dangers and disadvantages; but in our mechanical age, wherein man's attribute of invention is being so thoroughly exercised, the labour of tunnelling is expedited, and human toil abridged, by machinery. Some years ago there was a machine introduced, which—in soft, earthy matter, at all events—scooped out a pathway through a hill with considerable facility. This machine, however, never came into general use. America has contributed two borers to the progress of the art of tunnelling. The last of these is described as "having been invented and fabricated at Hartford. There is, in the first place, a steam engine of sixty horse power; this moves four piston rods horizontally; these rods move four stout half-circular plates, and these plates are set with revolving blades. The four blades are set upon a revolving table ten feet in diameter; and the movements of the whole are such that the revolving knives, or cutters, each running a quarter of a circle, cut a circular ring seventeen feet in diameter, and also cut a hole in the centre."

In the excavation of the tunnel through Mont Cenis, a machine has been used consisting of a huge framework, in which a number of chisels were arranged so as to cut into the face of the rock in "five horizontal grooves and two vertical channels." These channels and grooves readily isolated four separate blocks of rock, joined by their back surfaces only to the parent rock, from which they were easily parted by "hammer-driven wedges." The machine was about half as broad as the tunnel. The "actual working of the chisels was effected by a series of shocks caused by the impulse of coiled springs, so that each chisel worked a hole for itself; and a lateral movement of all the chisels connected all the chisel holes in a continuous groove or channel. A water wheel, or steam engine, produced power which drew back the chisels and compressed the springs, and the power of the spring then drove the chisels forcibly against the rock. This alternation took place 150 times in a minute."

SECTIONAL VIEW OF THE THAMES TUNNEL.

LESSONS IN NATURAL HISTORY.—No. XX.

THE ORANG-OUTAN—THE CHIMPANZEE—THE BABOON.

The following facts, illustrative of the structure and character of the orang-outan, may be added to the information conveyed in our last lesson. A female orang-outan, brought into Holland from the island of Borneo, was placed in the menagerie of the Prince of Orange. Her appearance was somewhat melancholy, but she loved company, particularly that of the persons to whose care she was committed, and she was always extremely gentle in her manners. Often when left alone, she was observed to throw herself on the ground, as if in distress, and was heard to utter the most doleful cries. But if her keeper sat near her on the ground, she would take the hay of her bed, arrange it by her side, and with the greatest anxiety and affection, invite him to take his place *there*. She was taken young, and on her first arrival, she was only two feet and a half high, and there was but little hair on any part of the body, except the back and arms. On the approach of winter she became thickly covered; and the hair on the back was, at least, six inches in length. The whole animal was then of a chesnut colour, except the skin of the face and the paws, which was somewhat of a reddish mouse colour.

Most commonly she walked on all fours, but she could also walk erect. At such times the difference between these creatures and man, was very easily perceived, particularly in reference to the means of locomotion. Her feet were not usually extended, but the toes were curved beneath in such a manner that she rested chiefly on the outer sides of her feet. Once she contrived to escape from her chain, and was seen to ascend with wonderful agility, the beams and oblique rafters of the building. She manifested extraordinary muscular power, for the efforts of four men were necessary to acccomplish her recapture. Two men were obliged to seize her by the legs, and a third by the head, while the fourth fastened a collar round her body. During the time she was at liberty she had, amongst other pranks, taken the cork from a bottle of Malaga, drank the wine to the last drop, and then returned the bottle to its place.

The Baboon.

The Chimpanzee.

She would eat of almost every kind of food that was given to her; but she lived chiefly on bread, roots, and fruits. Of carrots and strawberries she was particularly fond; she also liked eggs, breaking the shells with her teeth, and then sucking out the contents. When strawberries were given to her on a plate, she would take them up one by one with a fork, and thus put them into her mouth, while she held the plate with the other hand. She would eat meat that was cooked, but was not fond of raw flesh. Her usual drink was water, a glass of which she would carry to her mouth, in the same way as a human being. She would also drink very eagerly all sorts of wine, and particularly Malaga.

She would present her hand to conduct the people who came to visit her, and walk as gravely along with them as if she formed part of the company. She would frequently sit with persons at dinner, where she would unfold her towel, wipe her lips, use readily a fork or a spoon, pour her liquor into a glass, and make it touch that of a person who drank along with her. When invited to take tea, she would bring a cup and saucer, place them on

the table, put in sugar, pour out the tea, and allow it to cool before she drank it. These actions were performed at the instigation of certain signs and words from her master, but sometimes they took place of her own accord.

Whilst she was on ship board, she ran freely about the vessel, played with the sailors, and like them would go into the kitchen for her mess. At the approach of night, when she was about to lie down, she would prepare the bed on which she slept, by shaking the hay, and putting it in proper order; and last of all would cover herself up warm with the quilt. One day, seeing the padlock of her chain opened with a key, and shut again, she seized a little bit of stick, and put it into the key-hole, turning it about in all directions; thus trying to open the padlock. She died after having been about seven months in Holland. Such is an account of this interesting animal, on authority which is above suspicion.

The chimpanzee, like the orang-outan, with which it has been very generally confounded, has proved a copious source of the marvellous to those who have been led by interest or pleasure to cater for the credulous. It has greater facility for the biped or upright mode of locomotion than the orang-outan, and the facial angle (that is, the one formed of two lines, one descending from the forehead to the mouth, and the other passing from that point to the opening of the ear), is considerably less than it is in the latter animal. The arms of the chimpanzee are long, and its thumbs are larger and more serviceable than those of the orang-outan. Other differences in structure show clearly that there is a specific difference between the two animals.

A Young Orang-Outan.

Many years ago, a chimpanzee was caught in Angola, and brought to England. He was soon tamed, and became one of the gentlest creatures. He would even embrace, with the greatest tenderness, those persons whom he knew on board the vessel which brought him over. Although there were several monkeys in the ship, yet on no occasion would he associate with them. In many of his actions this creature displayed considerable sagacity. A suit of clothes was made for him, in the wearing of which, after awhile, he took great delight. Any part of this dress which he could not put on by himself, he would bring in his paws to some of the ship's company for assistance. He would lie down at night in his bed, place his head on the pillow, and pull up the bed-clothes to keep himself warm, in the same manner as a human being.

The last of the chimpanzees on which we have looked, is the one in the gardens of the Zoological Society. It was, however, very unwell, and was constantly watched with great attention by its keeper. It was very carefully wrapped up, and had all the aid that could be afforded by medical attendance and skill; but these seemed to be unavailing. The keeper feared then that it would not live, but it has now survived the attack from which it was suffering for several weeks; we may hope, therefore, that it will yet serve not merely to gratify, but to instruct its numerous and eager visitors. The first chimpanzee exhibited by the society arrived in 1835. Several specimens succeeded it, but none of them were equal in size or intelligence to "Jenny," who died in 1845, and whose remains are preserved in the Museum.

The appearance of the baboon is at once grotesque and formidable. In Siam, these animals frequently sally forth in astonishing multitudes to attack the villages, when the labourers are occupied in the rice harvest. They then plunder the dwellings of all the food on which they can lay their hands. Fruit, corn, and roots form their principal food, and to obtain these they often commit the most violent outrages on those who oppose them. The dog-faced baboons, inhabiting various parts of Asia and Africa, usually associate in vast companies. When travellers pass near their haunts, they run to the nearest trees, shake the boughs very vehemently, and chatter very loudly. They are very powerful animals, and they frequently commit such depredations in cultivated grounds, that the proprietors have armed men constantly on the watch, to prevent them from plundering.

LESSONS IN ENGLISH.—No. XLIX.

By John R. Beard, D.D.

In our last lesson, we treated very fully of the important case in English nouns, viz., the Saxon genitive, and we showed that this is recognised by the use of the apostrophe and the letter *s*. We now proceed to a conclusion on this subject.

If the several nouns which enter into a series represent each a distinct idea or fact, then the *'s* must be appended to each, e. g.

My *father's, grandfather's* and *uncle's* property was destroyed, this is a different statement from the following, my *father, grandfather* and *uncle's* property was destroyed. In the former sentence it is declared that three properties were destroyed; in the latter sentence it is declared that one property shared between three persons was destroyed.

There are cases where successive nouns depend on each other, the relation expressed by the genitive or possessive case subsisting between them severally, e. g.

My *son's wife's sister's husband* has arrived; that is, the *husband of my son's wife's sister*, or the husband of the *sister of my son's wife*.

Here, if the Saxon genitive is used, the *s* with the apostrophe must be used with all the nouns except the last.

Analyse this sentence, *I have bought a book of Richards*, and you will find that, as it here stands, it is not correct. "What is it you have bought?" "A book." "What book?" "A book of Richard's." "Do you mean a book belonging to Richard?" "Yes." "Then what you say is that you bought the book from Richard?" "No, I don't mean that; I bought it at the auction, Richard did not sell it me." "Auction! what, has Richard's library been sold?" "Yes." "O then you bought one of Richard's books; that is what you mean?" "Certainly." "Well, then, you must show by the apostrophe that Richard is in the possessive case, thus, 'I have bought a book of Richard's;' what you bought is a book of Richard's, that is, one of Richard's books."

I have been the more particular with this idiomatic phrase, because imperfect grammarians, fancying something wrong, sometimes attempt improvements by writing such instances without the sign of the possessive case.

You must be careful not to confound with the Saxon genitive an abbreviation of the verb *is*; e. g.

"A man's a man for a' that,"

where *'s* is an abbreviated or shortened form of *is*, the abbreviation being made for the sake of the rhythm or the length of the line.

RULES IN SYNTAX (by anticipation).

1. *One noun governs another in the possessive or genitive case.*

Explanation.—By *governing* the relation of dependence is meant, e. g., *the man's wife took the house from my father.* Here there are three instances of government or dependence: 1. *man's wife*; where *man's* is dependent on *wife*, the word *man* being changed into *man's* by the force of wife; 2. *took the house*; where *house* the object is dependent on the verb *took*; 3. *from my father*; where *father* is dependent on or is governed by the preposition *from*.

To the rule, then, above given may now be added these:—

2. *The object of a verb is that person or thing on which the action of the verb falls.*

3. *Nouns and pronouns may be dependent on prepositions as well as on verbs.*

These syntactical remarks are designed to prepare the way for the systematic study of syntax, or the laws of construction, on which we shall enter in due time.

EXERCISES.—COMPLETE.

You must keep him at arm's length. It is not larger than a pin's head. The Queen's carriage is the finest in London. The patriotism of Peter the Great, Emperor of Russia, was stained by many vices. The girl's mother gave money to the boy's aunt. The warmth of the sun and the mild light of the moon are very beneficial. The top of the mountain and the bottom of the valley are pleasant in different ways. The prince's son married the baron's daughter. For conscience' sake he refused to pay the tax. The children of the duchess come to-morrow. The duchess's carriage stops the way. I saw the Queen at Saint James's Palace. At Saint James's Palace gates sat three beggars. Have you seen Saint Peter's? No, but I have surveyed Saint Paul's. In a month's time I shall be in London. After two years' travelling we reached home. Are you going to your aunt's ball? No, I am going to a ball at my aunt's, given by my brother. Milton's Paradise Lost is a fine poem, but some prefer Dante's Divina Comedia. I have married the old man's daughter.

"Yet time ennobles and degrades each line;
It brighten'd Craggs's and may darken thine."—*Pope.*

"Now Jove suspends his golden scales in air,
Weighs the men's wits against the lady's hair."—*Pope.*

"Sad was the hour, and luckless was the day,
When first from Shiraz' walls I bent my way."—*Collins.*

"A wit's a feather, and a chief's a rod;
An honest man's the noblest work of God."—*Pope.*

"I dread thee, fate, relentless and severe,
With all a poet's, husband's, father's fear."—*Burns.*

EXERCISES.—INCOMPLETE.

Johns wife has been here. Henrys wifes sister is ill. Go to Hyams and get measured for a suit of clothes. The boys top is lost. The boys hats have been burnt. Edward Bulwer Lyttons new work called "My Novel" is very interesting. The Queen of Englands palace is in Saint James Park. One mans meat is another mans poison. Do you take your English lessons at your masters? No, he comes to my aunts and I go there. Captain Ross voyage to the North Pole was very dangerous. That book is my sisters. That is my sisters book. You must keep him at arms length. This is one of Marys poems. Peters wifes mother lay sick of a fever. I admire Beaumont and Fletchers plays. The fox has carried off a hen of Williams. Sir Walter Scotts works are instructive as well as amusing. The writings of Hannah More are not comparable with Scotts. Potters Greek and Kennets Roman antiquities are somewhat out of date. Mere happiness or misery is for the most part of their own making. The House of Lords differs greatly from the Lords house.

PARSING.

Ex.—A mother's tenderness and a father's care bestowed on me the best gifts of this world.

A, the indefinite article qualifying *mother*.

Mother's, a common noun, feminine gender, singular number, the possessive case, governed by *tenderness*, according to the rule "one noun governs another in the possessive or genitive case."

And, a conjunction.

A, the indefinite article.

Father's, a common noun, masculine gender, singular number, possessive case, governed by *care*, according to the rule, &c.

Care, a common noun, of the neuter gender, forming with *tenderness* the compound *subject* to the verb *bestow*.

Bestow, a verb, in the present time or tense, having for its *subject* or nominative case the two nouns, *tenderness* and *care*.

On, a preposition, governing *me*, according to the rule "nouns and pronouns may be dependent on prepositions."

Me, a pronoun depending on the preposition *on*, according to the rule, &c.

the, the definite article, qualifying *gifts*.

Best, an adjective, qualifying *gifts*.

Gifts, a common noun, in the neuter gender and the plural number, being the *object* to the verb *bestow*, according to the rule "the object of a verb is that person or thing on which the action of the verb falls."

Of, a preposition, forming with *world*, the Norman-French *genitive* that is, the preposition *of* governs *world*, according to the rule, &c.

This, a demonstrative pronoun, qualifying *world*.

World, a common noun of the neuter gender and in the singular number, governed by the preposition *of*, according to the rule, &c.

Words with their proper prepositions, for the formation of sentences.

	F. R.
Disqualify for,	dis *not*, qualis, *like, fit*
Dissatisfied with,	dis, *not*, satis, *enough*
Dissent from,	dis, *differently*, sentio, *I think*
Distinct from, between	dis, *differently*, tinguo, *I dye*
Distrustful of,	dis, *not*, trywsian, *to confide*
Divest of,	dis, *not*, vestis, *a garment*
Divide between, (two) among (many)	dis, *differently*, vido (obsolete), *I separate*
Dote on,	Dutten, to be *foolish*, delirious, comp. *doze*
Doubt of,	Dubium, *doubt*
Dwell in,	Dvaeler, to *tarry, to stay*

ADJECTIVES.

IF we look at the etymology of the word *adjective* (Latin ad *to*, and jacio *I throw or put*), we find that an adjective is a word which is put to another. This is not a specific definition, for equally well may it be said that a pronoun or a preposition is a word put to another. Failing in the etymology, we must look to the sense for information. Take the following phrases:—

White linen pleases the eye.
Long days come in summer.
Tall men are often weak.

Here we find the words *white, long*, and *tall* related in the same way to the several nouns *linen, days* and *men*. And the former words are related to the latter so as to ascribe to them a certain quality, that is to tell us of what kind or sort they are; thus the *linen* spoken of is *clean* not *dirty*, the days are *long* not *short*, the men are *tall* and not of *low stature*. These three words then assign the quality of the three nouns before which they are placed. And these three words are commonly called *adjectives*. Hence we learn that it is the function (office) of adjectives to assign the qualities of nouns. An adjective may accordingly be termed *a qualifier*; that is, a word which states the quality of a noun. As the adjective qualifies (from the Latin qualis *of what kind*, and facio *I make*), so does it answer to the question *of what kind*? Thus, in the instances given above, *linen of what kind*? Answer, *white*. *What kind* of days? Answer, *long*. *What kind* of men? Answer, *tall*. But a qualifying word depends for its meaning on the word qualified. What is the signification of *clean, long, tall*, without the nouns before which they stand? *A lofty*—are words having no sense until you add *tower*, or a similar term. There is then, you now see, some reason for the name adjective, i. e. *the added word*, inasmuch as the adjective has no independent meaning, and acquires meaning only in union with a noun.

As added words, adjectives come into existence *after* nouns to

which, in their very nature, they are adjuncts. Adjectives, therefore, are in the history of language, of late origin. This is seen also in the fact that they imply a greater degree of discrimination in regard to the qualities of things than is involved in the existence of nouns. A noun, in giving a name to an object, describes its qualities. Thus the word *man* characterises an intelligent being. But under the general term *man* stand many individual men. These individual men vary from each other; some are tall, some short; some weak, some strong; some young, some old; some black, some white. The one class is subdivided into many classes, and the signs of these classes are severally given by adjectives. The adjective, in consequence, implies an advanced state of mental culture, since it is the expression of somewhat minute mental discrimination.

The adjective, I have intimated, has no meaning by itself. "A red—" are senseless words, but "a red *orange*" conveys an idea. The widest signification is given to an adjective by appending to it the word *thing*, as, "*a good thing*; *a bad thing*." Hence, you see how near the adjective stands in sense to the noun, for *thing* is a very indefinite term. Indeed the adjective and the noun alike denote qualities. Thus, *a swift stream* is "a swift or rapid flow" (of water). The noun *stream* describes the flow of the water, as you may see, in the fact that you cannot with propriety speak of *a flowing stream*, inasmuch as it is in the very nature of a stream to flow, and *flowing* or *to flow* is involved in the term stream itself. But you can say *a swift stream*, because swift adds a description to the description already given, telling you how the stream flows. Thus the noun *stream* sets forth the quality of *flowing*, and the adjective *swift* sets forth the quality of *swiftness*. The noun and the adjective indeed describe qualities in different ways; the noun describes a quality in the abstract; the adjective describes a quality in the concrete. *Abstract* and *concrete* are logical terms. *Abstract* (from the Latin abs *from*, and traho *I draw*), represents a quality as drawn away or standing apart from any particular object; *whiteness* is an abstract word, as it describes the quality *white* considered alone that is, apart from any subject. *Concrete* (Latin con (cum) *with*, and cresco *I grow*) is a term which speaks of qualities in union with subjects, e. g. *an octavo*, what? *Volume*; *an octavo volume*; *octavo* describes a certain quality as belonging or attached (*concrete*) to a book here called *a volume*. Abstract and concrete terms then are nearly related. In truth, a concrete term passes into an abstract term merely by taking the termination *ness*; as good, good-*ness*. So nearly are concrete and abstract terms related that they are sometimes used for one another. In the Hebrew, a very early and a primitive language, concrete terms or adjectives are comparatively few, their office being frequently discharged by abstract terms or nouns. In English, adjectives are occasionally used as nouns, thus "elder" in the singular, becomes in the plural "the elders." The ease with which adjectives become nouns is exemplified in such proper names as *Mr. Brown*, *Mr. White*, *Mr. Short*, *Mr. Long*, &c. Nouns also perform the part of adjectives, as "a *fish* slice," "a *silver* spoon," "a *gold* pin."

Adjectives in English undergo no change from gender, number, or case. We use the term *good*, for instance, indifferently with a masculine and a feminine noun, a singular and a plural, the subject and the object, e. g.

Obj. I saw a *good* man and *a good* woman, *good* boys and *good* girls.

Subj. A *good* man and a *good* woman, *good* boys and *good* girls were seen by me.

The only inflexion which adjectives undergo is one by which degrees of quality are expressed. In thought, take any quality, say *long*, and consider of what modifications it is capable. An object may be *long* as opposed to an object that is *short*. This we may call its *positive* condition. Or one object may be *longer* than another. Here, as a comparison is made or implied, we may call this the *comparative* condition. Or, again, an object may be *longer* than many other objects, that is, it may be *longest*. *Longest* may be termed the *superlative* condition, inasmuch as the object that is longest surpasses, that is, becomes *superlative* to all others. Here, then, are three conditions, the positive, *long*; the comparative, *longer*; and the superlative, *longest*. These three conditions are ordinarly termed degrees, hence we have *the positive degree*, *the comparative degree*, and *the superlative degree*. These are *the three degrees of comparison*, to use the common phraseology, though there is little propriety in calling the positive condition a *degree of comparison*.

LESSONS IN GERMAN.—No. LII.

§ 15. Observations on the declension of common nouns.

(1) Some have no singular: as, in the following list:

Aeltern (Eltern), parents.	Koſten, and Unkoſten, costs.
Ahnen, ancestors.	Kriegsläufte, events of war.
Alpen, alps.	Leute, people, folks.
Annaten, first fruits.	Maſern and Rötheln, measles.
Beinkleider, small clothes.	Molken, whey.
Blattern, small-pox.	Oſtern, Easter.
Briefſchaften, letters, papers.	Pfingſten, Whitsuntide.
Einkünfte, revenue.	Ränke, tricks.
Faſten, Lent, fasts.	Repreſſalien, reprisals.
Ferien, Holidays.	Schranken, bounds.
Fußſtapfen, footsteps.	Speſen, expenses.
Gebrüder, brothers.	Sporteln, fees.
Gefälle, rents.	Spolien, spoils.
Geſchwiſter, brothers and sisters.	Studien, studies.
Gliedmaßen, the limbs.	Träber or Treber, husks, less.
Händel, quarrels.	Trümmer, ruins.
Hefen, dregs, yeast.	Truppen, troops.
Hoſen, trow ers.	Weinachten, Christmas.
Inſignien, marks, badges.	Zeitläufte, events of the times.
Kalbaunen, entrails.	Zinſen, interest of money.

Leute merely expresses plurality of persons. In this it differs from Menſchen (*human beings*) which has regard to the kind or species, as also from Männer (*men*) which denotes particularly the sex. Those compounds, however, of which, in the singular, Mann forms the last part, take generally, in the plural, Leute instead of Männer; thus,

Singular.	*Plural.*
Arbeitsmann, workman;	Arbeitsleute, workpeople
Edelmann, nobleman;	Edelleute, noblemen.
Kaufmann, merchant;	Kaufleute, merchants.
Landmann, countryman;	Landleute, countrypeople.

The distinctive difference between Leute and Männer may be forcibly shown by reference to the words Eheleute and Ehemänner. Eheleute means married *people*; Ehemänner signifies married *men*, i. e. husbands.

(2) Some have no plural, according to the following heads:

a. Generic names of material substances; as, das Gold, gold; Silber, silver; Eiſen, iron; &c.

b. General terms and those expressive of abstract ideas; as, Raub, pillage; Ruhm, glory; das Vieh, cattle; Vernunft, reason; Stolz, pride; Kälte, cold; &c.

c. Some names of plants; as, der Kohl, the cabbage; Hopfen, hops; Kreſſe, cresses; &c.

d. All infinitives employed as nouns, as also all neuter adjectives so employed; as, Leben, life; Verlangen, wish; das Weiß, white; &c.

e. Nouns, for the most part, denoting quantity, number, weight or measure; as, Bund, bundle; Dutzend, dozen; Grad, degree; Pfund, pound; Zoll, an inch, &c.

It should be noted that words expressing quantity, number, weight or measure, even if qualified by numerals signifying *more than one*, are rarely found in the plural. Thus, in German, we say, neun Klafter, *nine fathoms*; hundert Grad, *a hundred degrees*; &c., where, though the numeral expresses more than one, the noun of measure is still in the singular number. Feminines ending in e and words denoting periods of time, as also the names of coins, are, in general, excepted from this rule.

(3.) Some, in the plural, have two forms; conveying, in general, different, though kindred significations; as in the following examples:

Singular.	*Plurals.*	
der Band,	Bande, bonds, fetters;	Bänder, * ribbons.
die Bank,	Bänke, benches;	Banken, banks (of commerce).

* The singular of this is das (*neuter*) Band. From der Bank we have another form; Bände, volumes.

Singular.	*Plural.*	
der Bogen,	Bogen, sheets of paper;	Bögen, arches, bows.
das Ding,	Dinge, things in general;	Dinger, little creatures.
der Dorn,	Dornen, kinds of thorn;	Dörner, thorns (more than one).
der Fuß,	Füße, feet;	Fuße, feet (as measures).
das Geſicht,	Geſichte, visions, sights;	Geſichter, faces.
das Horn,	Horne, sorts of horn;	Hörner, horns (more than one).
das Holz,	Holze, sorts of wood;	Hölzer, pieces of wood.
der Laden,	Laden, shutters;	Läden, shops.
das Land,	Lande, regions;	Länder, states.
das Mahl,	Mahle, marks, seasons;	Mähler, meals.
der Mann,	Männer, men;	Mannen, vassals.
der Mond,	Monden, months;	Monde, planets.
der Ort,	Orte, places (any);	Oerter, places (particular).
die Sau,	Sauen, wild boars;	Säue, swine.
der Schild,	Schilde, shields;	Schilder, † sign-boards.
die Schnur,	Schnüre, tapes;	Schnuren, daughters-in-law.
der Strauß,	Sträuße, nosegays;	Straußen, ostriches.
das Wort,	Wörter, words (more than one);	Worte, words (in construction).
der Zoll,	Zolle, inches;	Zölle, tools.

§. 16. Foreign nouns.

(1) Some nouns introduced into the German from foreign languages, retain their original terminations unaltered: as, der Medicus, a physician; plur. Medici, physicians; Factum, deed; Facta, deeds. These are from the Latin.

(2) Some masculines and neuters from the French and the English, merely affix s to the genitive singular, which is retained in all the cases of the plural; as, nom. der Lord, the lord; gen. des Lords, of the lord; plur. die Lords, the lords, &c from the English; der Chef, the chief; gen. des Chefs, of the chief; plur. die Chefs, the chiefs, &c. from the French.

(3) But foreign nouns, for the most part, drop the terminations peculiar to the language whence they come, and substitute those characteristic of the German. Some accordingly, are found to be declined after the old declension, some after the new, and others, again, partly after the one and partly after the other.

§. 17. Foreign nouns of the old declension.

(1) Foreign nouns of the neuter gender, as also most of the masculines are of the old declension.

(2) Among the masculines must be noted those appellations of persons ending in the following terminations:

al; as, Kardinal, cardinal.
ar; as, Notar, notary.
an; as, Kaſtellan, castellan.
aner; as, Dominikaner, dominican.
iner; as, Benediktiner, benedictine.

To which may be added Abt, abbot; Propſt, provost; Papſt, pope; Biſchof, bishop; Mayor, mayor; Spion, spy; Patron, patron; Offizier, officer.

(3) Some have, in the plural, the form er (e + r); as, Hoſpital, hospital; Spital, hospital; Kamiſol, waistcoat; Regiment, regiment; Parlament, parliament; plur. Hoſpitäler, hospitals; Spitäler, hospitals, &c.

(4) Some, in the plural, soften the radical vowels; as, Abt, abbot; Altar, altar; Biſchof, bishop; Chor, choir; Choral, choral-song; Hoſpital, hospital; Spital, hospital; Kanal, canal; Kaplan, chaplain; Kardinal, cardinal; Kloſter, cloister; Marſch, marsh; Moraſt, morass; Palaſt, palace; Papſt, pope; Propſt, provost; plur. Aebte, abbots; Altäre, altars; Biſchöfe, bishops; &c.

§ 18. Foreign nouns of the new declension.

(1) To the new declension belong all foreign nouns of the feminine gender and nearly all masculines which are the appellations of *persons*. The latter are chiefly those ending in the following terminations;

at; as, Advocat, advocate.
ant; as, Adjutant, adjutant.
ent; as, Student, student.
ik; as, Katholik, Catholic.
aſt; as, Phantaſt, humorist.
iſt; as, Juriſt, lawyer.
oſt; as, Staroſt, Polish magistrate.
et; as, Poet, poet.
it; as, Jeſuit, Jesuit.
ot; as, Idiot, idiot.
e; as, Cleve, pupil.
log; as, Theolog, theologian.
ſoph; as, Philoſoph, philosopher.
nom; as, Aſtronom, astronomer.

(2) To these may be added some other foreign masculines; as, der Elephant, the elephant; der Dukat, the ducat; der Komet, the comet; der Planet, the planet; der Konſonant, the consonant; der Prinz, the prince; der Tyrann, the tyrant.

§ 19. Foreign nouns partly of the old and partly of the new declension.

(1) These are, *first*, neuters ending in ſiv; as, das Paſſiv, the passive; gen. Paſſivs, of the passive; plur. Paſſiven, the passives; —*secondly*, titles of males in or; as, Doctor, a doctor; gen. Doctors, of a doctor; plur. Doctoren, doctors;—*thirdly*, neuters ending in al, il and um, which also, often have i before the en of the plural; as, Kapital, a capital; plur. Kapitalien, capitals; Foſſil, a fossil; plur. Foſſilien, fossils; Studium, study; plur. Studien, studies;—*fourthly*, the following masculines, Aſterisk, asterisk; Diamant, diamant; Faſan, pheasant; Kapaun, capon; Import, import; Konſul, consul; Muskel, muscle; Pantoffel, slipper; Präfekt, prefect; Pſalm, psalm; Rubin, ruby; Staat, state; Thor, gate; Traktat, treatise; Zins, rent; to which add Inſekt, insect; Atom, atom; Pronom, pronoun; Statut, statute, and Verb, verb; which are neuters.

§ 20. Declension of proper nouns.

Singular number.

(1) Names of males and females, except when the latter terminate in e, take s to form the genitive, which is their only variation; as,

N.	Heinrich, Henry.	Eliſabeth, Elizabeth.
G.	Heinrichs, of Henry.	Eliſabeths, of Elizabeth.
D.	Heinrich, to Henry.	Eliſabeth, to Elizabeth.
A.	Heinrich, Henry.	Eliſabeth, Elizabeth.

It is customary with some writers to affix en to the dative and accusative of proper names; but the better usage distinguishes these cases by prefixing the article; as, nom. Leſſing, Lessing; gen. Leſſings, of Lessing; dat. dem Leſſing, (instead of Leſſingen), to Lessing; acc. den Leſſing, (instead of Leſſingen), Lessing.

(2) Names of females ending in e, as also of males ending in s, ß, ſch, x or z, from the genitive in ens; as,

N.	Luiſe, Louisa.	Leibnitz, Leibnitz.	Voß, Voss.
G.	Luiſens, of Louisa.	Leibnitzens, of Leibnitz.	Voſſens, of Voss.
D.	Luiſe, to Louisa.	Leibnitz, to Leibnitz.	Voß, to Voss.
A.	Luiſe, Louisa.	Leibnitz, Leibnitz.	Voß, Voss.

The genitive, dative and accusative of names ending in a, are sometimes formed by adding respectively ens and en after dropping the a; as, Diana, Diana; gen. Dianens, of Diana; dat. Dianen, to Diana; acc. Dianen, Diana. The termination ens, sometimes suffers contraction; as, Voß's, Voss's; Leibnitz's, Leibnitz's.

(3) Names whether of males or females, when preceded by an article, are indeclinable; as,

N.	der Schiller, the Schiller.	die Luiſe, the Louisa.
G.	des Schiller, of the Schiller.	der Luiſe, of the Louisa.
D.	dem Schiller, to the Schiller.	der Luiſe, to the Louisa.
A.	den Schiller, the Schiller.	die Luiſe, the Louisa.

(4) Foreign names, also, having the unaccented terminations as, es, is, us, admit no variations of form, either in the sin-

† In the singular, das Schild

gular or the plural. When, therefore, their case and number are not otherwise sufficiently indicated, an article or a preposition is used to point them out.

§ 21. Proper nouns in the plural.

(1) Proper nouns, when employed in the plural, conform, for the most part, to the rules for the declension of common nouns: the masculines being varied according to the old declension, and the feminines according to the new.

Sometimes the plural is made by the addition of s to the singular; as, die Schillers, the Schillers; die Herders, the Herders. Those ending in e add for the plural n e, or n e n; as, Cato, Cato; nom. plur. Catone, or Catonen, the Catos; &c.

(2) Their inflection is in nowise affected by the presence of the article, nor do the radical vowels a, o, u, au, ever assume the Umlaut.

Examples.

N.	die Leibnitze, the Leibnitzes.	die Schlegel, the Schlegels.
G.	der Leibnitze, of the Leibnitzes.	der Schlegel, of the Schlegels.
D.	den Leibnitzen, to the Leibnitzes.	den Schlegeln, to the Schlegels.
A.	die Leibnitze, the Leibnitzes.	die Schlegel, the Schlegels.
N.	die Luisen, the Louisas.	die Annen, the Annes.
G.	der Luisen, of the Louisas.	der Annen, of the Annes.
D.	der Luisen, to the Louisas.	den Annen, to the Annes.
A.	die Luisen, the Louisas.	die Annen, the Annes.

§ 22. Proper names of countries, cities, &c.

(1) Proper names of places admit no changes of form for the purposes of declension, beyond the mere addition of s, to the genitive singular; as, Berlin, Berlin; gen. Berlins, of Berlin.

(2) If, however, the word end in a sound not easily admitting an s after it, the case is distinguished by placing before it a noun preceded by the article; or it is expressed by the prep. von. *Example:* die Stadt Mainz, the city Mayence. Der König von Preußen, the king of Prussia. Die Einwohner von Paris, the inhabitants of Paris.

§ 23. Observations.

(1) When several proper names belonging to the same person, and NOT *preceded by the article*, come together, the *last* one only is declined; as, Johann Christoph Adelungs Sprachlehre, John Christopher Adelung's grammar:—if, however, *the article precede*, none of them undergo change; as, die Werke des Johann Gottlob Herder, the works of John Gottlob Herder.

(2) When a common and a proper name of the same person, *preceded by the article*, concur, the *common* noun alone is inflected; as, der Tod des Königs Ludwig, the death of king Louis: *if no article precede*, the *proper* noun is declined; as, König Ludwigs Tod, king Louis' death.

When the word Herr is used with a proper noun, it is declined; as, Herrn Schlegels Gedichte, *not* Herr Schlegels Gedichte, Schlegel's poems.

(3) When a Christian name is separated from a family name by a preposition (specially von), the *Christian* name only admits of declension; as, die Gedichte Friedrichs von Schiller, the poems of Frederick of Schiller:—if, however, the genitive *precede* the governing noun, the *family* name only takes the sign of declension; as, Friedrich von Schillers Werke, Frederick of Schiller's works.

THE MISSIONARY SETTLEMENT.

By heav'n directed, by the world revil'd,
Amidst the wilderness, they sought a home,
Where beasts of prey and men of murder roam,
And untam'd Nature holds her revels wild:
There on their pious toils their Master smil'd,
And prosper'd them, unknown and scorn'd of men,
Till in the satyr's haunt and dragon's den,
A garden bloom'd, and savage herds grew mild.
So, in the guilty heart, when heav'nly grace
Enters, it ceaseth not, till it uproot
All evil passion, from each hidden cell,
Planting again an Eden in their place,
Which yields to men and angels pleasant fruit,
And God himself delighteth there to dwell.

LESSONS IN LATIN.—No. LV.

By John R. Beard, D.D.

VERBS AND RELATIVES.

In compound sentences one of the members may be introduced by a relative; this is called a relative member, or clause, e. g.,

Is, *qui omnia tenet*, favet ingeniis;
He who possesses all things patronises talent.

where qui omnia tenet is a relative member, so called because it is introduced by qui. The sentence is obviously made up of two sentences, as may be thus seen in these examples:

CHIEF SENTENCE.
Is favet ingeniis.
RELATIVE SENTENCE.
qui omnia tenet,

CHIEF SENTENCE. | RELATIVE SENTENCE.

Caesar *in fines Ambianorum pervenit* | qui se ei dediderunt.
Caesar came into the territories of the *Ambiani, who surrendered to him.*

Virtuti opera danda est | sine quâ virtutem assequi non possumus.
To virtue we must pay attention, without which all are *unable to attain virtue.*

In these cases, the relative merely qualifies the meaning. These therefore are illustrations of *qualification*, and not of *government*. But besides *qualifying*, a relative in union with a verb, or what is called a dependent relative, may govern the verb which is in a state of dependence. The dependent verb must be in the dependent, or what is commonly called the subjunctive (*subjoined*) mood. The general rule may be stated in these words: *A relative dependent clause takes its verb in the subjunctive mood.* Observe that the construction implies two things, namely, that the clause is a *dependent*, and that the clause is a *relative* clause; merely a relative clause does not require a subjunctive mood; and a dependent verb, we have already seen, may be in the infinitive mood, e. g.,

Scio quid hoc *sit*.
I know what this is.

Here sit is in the subjunctive mood by the force of scio quid, The sentence consists of two members or two sentences, thus, hoc est tale, and scio hoc esse tale; the two put together make scio quid hoc sit. Note that the Latin *sit* is represented by the English *is*; consequently in relative dependent clauses you must turn the Latin subjunctive into an English indicative, and the English indicative into a Latin subjunctive. The phrase nescio quid hoc scit may be regarded as an indirect question; thus, quid est hoc? *what is that?* nescio, *I know not*; or, in full, *nescio quid hoc sit*. Indirect questions have the second verb in the subjunctive mood.

The usages of the subjunctive mood in Latin, which are numerous, and which require study and practice to be clearly and fully understood, may in general be traced to the fact that the subjunctive is, in its essence, the mood which denotes dependence. Hence, when dependence is to be expressed otherwise than by an infinitive mood, the subjunctive must be employed. The necessity of employing another mood than the infinitive, arises from the fact, that for the expression of the sense, you have to use the relative pronoun, or some relative particle, such as quod, quin, quum.

In what is called the *obliqua oratio* the relative clause takes the verb in the subjunctive mood. The *obliqua oratio*, or indirect mode of speech, takes place when a fact, instead of being simply related as a fact, is given as set forth or conceived by the speaker. The obliqua oratio supposes or implies the recta, the straightforward or simple statement, e. g.,

THE RECTA ORATIO. Reversi sunt qui venerunt.
They who came returned.

THE OBLIQUA ORATIO. Reversos esse qui venerint indignabatur Caesar.
Caesar was angry that they who came returned.

Here qui venerunt in the direct form is changed into qui venerint in the indirect form. Take another instance;

1. ORATIO RECTA.

Quid *restat* si neque ex equis *pepulimus* hostem, neque pedites quidquam momenti *fecimus?* Quam tertiam *expectamus* pugnam?

1

What remains, if we have neither driven the enemy with our horse nor done any thing of moment with our infantry? Can we expect a third battle of any kind?

3. ORATIO OBLIQUA.

Equites alius alium increpantes quaerebant:—Quid deinde *restarent*, si neque ex equis *pepulissent* hostem, neque pedites quidquam momenti *fecissent*? Quam tertiam *expectarent* pugnam?

2.

The infantry, reproaching each other, inquired—What then remained, if they had neither driven, &c.

In the second, or *obliqua oratio*, where the same facts are spoken of, and where the facts are spoken of as dependent on the complaints and inquiry of the infantry, the verbs are all in the subjunctive mood, while in the *recta oratio*, or independent manner, they are all in the indicative. Sometimes no such phrase occurs as *he said, he thought, he feared*, but the dependence is to be sought in the mind of the speaker. If the matter is given as connected with a thought or feeling in the mind of the *subject* of the sentence, the relative clause or clauses must be in the subjunctive mood.

If the relative clause expresses an object or aim, the subjunctive is required, e. g.,

Delecti Delphos missi sunt *qui consulerent* Apollinem.
Chosen persons were sent to Delphi to consult Apollo.

Here there is a latent reference to the understood or avowed design in the minds of those who chose the deputies. Had the word stood qui consuluerunt, the sense would have been that persons were sent, and that those persons did consult the oracle, whether chosen for that purpose or not.

A relative clause is put in the subjunctive when the relative has a causal force; that is, assigns the reason of the act or the nature, the consequence or the result of the thing.

Incidunt causae *quae conturbent* animos.
Events happen of such a nature as to disturb our minds;

a different statement from

Incidunt causae quae conturbant animos.
Events happen, and these events disturb the mind;

whether or not, they are of a nature to do so.

The relative followed by a subjunctive, is often preceded by dignus, indignus, idoneus, aptus, tantus, talis, is, ejusmodi, &c., e. g.,

Tabulae non satis *dignae* sunt *quae* iterum *legantur*.
The plays are not worth being read a second time.

There is a causal force in the phrases is sum qui, *I am the person* (to do so and so), est qui, sunt qui, reperiuntur qui, *there are such persons, persons are found who*, &c., e. g.,

Ego is sum qui Caesari concedi *putem* utile esse.
I am the person to think it useful to concede to Caesar.

Somewhat similar are the negative phrases nemo est quin, nihil est quin, e. g.,

Nego in Sicilia tota *ullam picturam* fuisse *quin* Verres *conquisierit*.
I deny there was in all Sicily a picture but Verres made it his own.

Here the particle quin is equivalent to quam non.

As the relative quin, so the relative particles quod and quum, when they assign a reason, require a subjunctive mood; but these will be treated as conjunctions.

Sometimes the causal force of the relative must be given in English by a circumlocution; e. g.,

Tarquinio quid impudentius, *qui* bellum *gereret* cum iis qui non tulerunt ejus superbiam?
What is more impudent than Tarquin, who made war against those who did not brook his arrogance?

In this translation, the force of the qui with the subjunctive is hardly seen; it would be better to say, FOR *he made war* or INASMUCH *as he made war*; or to paraphrase the words thus, *whose impudence was seen in that he made war.*

Occasionally the particles utpote and quippe are prefixed to the relative in order to increase its causal force; e. g.,

Antonius non procul aberat, *utpote* qui expeditus sequeretur.
Antony was not far distant, since he followed unincumbered.

VOCABULARY.

Serus, a, um, *late*; vesper, ĕris. and eri, m. *the evening*; animam agere, *to be dying, to be in the last struggle*; censeo, 2, *I think, I am of opinion, I hold*; versor, 1. dep. *I am amongst*, literally, *I turn myself, I turn, I am in the midst of*; signa conferre, *to bring the standards together, to join battle, to fight*; praeco, ōnis, m. *a herald*; candor, ōris, m. *burning, brilliancy*; quippe, *for*; quippe qui, *inasmuch as it, seeing that it.*

EXERCISES.—LATIN—ENGLISH.

Nemo scit quid serus vesper secum portet; ite, create consules ex plebe; patres fremunt—irent, crearent consules ex plebe; hoc tunc sentiet quum animam aget; dixit eum hoc tunc sensurum esse quum animam ageret; faciam quae consul imperavit; dicit se facturum (esse) quae consul imperaverit; dicebat se facturum quae consul imperasset; nec cum eo tanquam cum cive agendum fuisse, qui spem regni conceperit; Caesari nuntiatur Sulmonenses cupere ea facere quae vellet; legatos ad Caesarem mittunt milites sese paratos esse portas operire, quaeque imperaverit facere; puniret noxios, ignosceret lapsis, et duceret in hostem; quum abessem, quotiescunque patria in mentem veniret, haec omnia occurrebant, colles, campique, et Tiberis, et hoc coelum sub quo natus educatusque essem; mos est Athenis laudari in concione eos qui sint in proeliis interfecti; noctu ambulabat in publico Themistocles, quod somnum capere non posset; nulla videbatur aptior persona quae de actate loqueretur; nulla acies humani ingenii tanta est quae penetrare in coelum possit; innocentia est affectio talis animi quae noceat nemini; videndum est ut ea liberalitate utamur, quae prosit amicis, noceat nemini; nulla gens tam fera est cujus mentem non imbuerit deorum opinio; Campani majora deliquerant quam quibus ignosci posset; ego is sum qui Caesari concedi putem utilius esse quod postulat quum signa conferri; qui se ultro morti offerunt facilius reperiuntur, quam qui dolorem patienter ferant; nemo est quin malit integras omnes partes corporis imminutas habere; quis est quin cernat quanta vis sit in sensibus; nihil est quin male narrando possit depravari; nihil est quin intereat; absolvite eum qui se fateatur maximas pecunias cum summâ sociorum injuriâ cepisse; genus dicendi est eligendum quod maxime teneat eos qui audiant; quis es? nescio quis sim; multi erunt quibus recte litteras dare possis; nullum est animal praeter hominem quod habeat notionem aliquam dei; solis candor illustrior est quam ullius ignis, quippe qui in immenso mundo tam longe lateque colluceat.

ENGLISH—LATIN.

I know not what to-morrow may bring; he says the enemy is about to come; no one knows when he shall die; do you know when those who have come will return? I wonder you do not laugh when you look at each other; my father said he wondered I did not laugh when I saw thee; is there any person more suitable to (who should) teach Greek? I know no one who is more fit to make boys diligent and good; I shall walk by night because I cannot sleep; virtue injures no one; they who declare virtue injures no one, are wise; I am not the person to say that religion injures men; who is there that does not see how great is the power of religion?

LESSONS IN GEOLOGY.—No. XXXIII.

By THOMAS W. JENKYN, D.D., F.R.G.S., F.G.S., &c.

CHAPTER III.

ON THE INFLUENCE OF ATMOSPHERIC AGENTS ON THE EARTH'S CRUST.

SECTION II.

ON THE PRODUCTION OF LANDSLIPS.

THE moisture of the atmosphere, in the form of dew, rain or melted snow, enters into the surface of all rocks which are of a loose and open texture. When the sands or gravels of these beds become infiltrated and saturated with water, they produce landsprings.

We have already considered the action of water on the earth's crust, as a mechanical agent employed in abrading and transporting the materials of rocks. The purpose of this lesson is to represent the action of moisture, as a meteoric agent producing great changes in the position and conformation of rocks. We are here to examine its mechanical agency, not as running water, but as acting by weight, by percolation, and by its power to loosen the soils of beds.

There are, indeed, three processes for the production of landslips. They are produced sometimes by glaciers, sometimes by the freezing of infiltrated water, and sometimes by the softening

of the surface of beds of clay, upon which masses of rock may be found to rest.

The meaning of the term "Landslip" must be now well known to every one who has travelled by railway. Every passenger has observed how large masses of soil, on the inclined sides of a railway cutting, have given way, have slipped down to a lower level, and have, in many instances, rushed down upon the rail plates so as effectually to stop the passage of trains. The effects of a landslip in a railway cutting are generally very limited; but they may be seen on a large scale in the Undercliff of the Isle of Wight, from Shanklin to Black Gang, and also in other districts on the south-western coast of England.

The Hampshire Peninsula, called the Isle of Portland, furnishes a good example for illustrating both the principles and the phenomena of landslips. The rocks of these cliffs rest upon the Kimmeridge clay, which is a soft argillaceous bed constantly acted upon by percolating waters or land springs. In 1665, the cliffs, to the extent of a hundred yards, became loosened, cracked, and then sank or fell into the sea.

In 1792, a much more extensive slip took place in these cliffs. One morning, the public road, passing over this district, and lying at no great distance from the verge of the cliffs, was observed to crack. The gap opened wider and wider, till early in the afternoon, the whole mass between the crack and the sea, was seen to have sunk seven feet; but yet so slowly and gently as to produce no noise. Towards evening, the sunken mass seemed to have settled down, but when the people came to see it, next morning, they found that the entire district, about a mile and a quarter from north to south, and about a furlong from east to west, had slipped from the top of the cliff to the water side, and that in some places, to so much as fifty feet perpendicular.

On the Dorsetshire coast, between Lyme Regis and Axminster, an extraordinary landslip occurred in December 1839.

In this district the upper bed is chalk. This rests upon a bed of sandstone alternating with chert. All these repose upon a lower bed of loose sand, more than a hundred feet in thickness, and having concretions at the bottom, belonging to what is called the greensand formation. When you are on the shore below these cliffs, you see that all these beds rest upon the lias, a bed of clay which is very retentive. Though water will not percolate through this lias clay, it can make its surface soft and slippery to the rocks resting upon it.

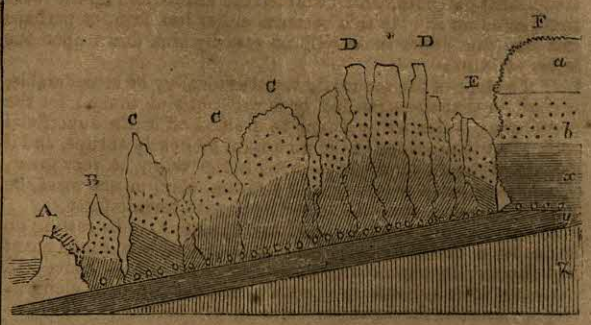
In the thick bed of sand marked *x* in our next diagram, there are many springs, which gush out in several places. Here atmospheric waters have percolated through the rocks downward till they came to the lias bed, which resists their farther descent. In your efforts to understand the landslip, you are to take into account that this bed of lias clay slopes toward the sea, and that, accordingly, the water, in seeking its level, tries to escape along this inclined slope. As the water proceeds, it carries with it, in minute grains, portions of the sand bed that is nearest the clay, and renders the surface of the clay slippery to the rocks lying upon it. As this action is going on without intermission for years and ages, it eventually undermines the overlying strata, so as to cause a succession of subsidences. You will at once comprehend this when you consider that, as the sand rock sinks closer to the lias clay, its gravel keeps continually within the action of water which carries it away, and that, therefore, the weight of the rocks above causes it to subside closer upon the clay.

In 1839, there had been great rain, which completely infiltrated the rocks, and saturated them with moisture. The process of the landslip is now before you. In addition to the undermining agency of the water below the sand, there was the immense weight of the saturating water in the rocks above. By the combination of both these agencies, the beds were pressed down, were cracked perpendicularly, and were made to slide along the slippery slope of the clay, until they all precipitated themselves in wild confusion towards the sea.

Had you been there on the Christmas eve of 1839, you would have heard a crashing noise in the cliffs, and would have seen fissures opening in the ground. On the area which we have described there were some houses, whose walls were seen to crack and to sink with the soil. At one spot, near the farthest crack from the edge of the cliff, the whole ground, half a mile in length, and two hundred and forty feet in breadth, sunk so far down as to form a chasm from a hundred to a hundred and fifty feet deep.

The annexed diagram will help you to understand the different circumstances which have been described.

Fig. 73.



A Landslip, between Lyme Regis and Axminster, on Dec. 25. 1839.

In the above diagram, *a b x y* represent the beds of the cliff of chalk downs. E the farthest crack from the shore, which afterwards became a wide and deep chasm. DD are fragments of the chalk bed *a*, and attached to F before the landslip in 1839. DCCC, the district called Bendon Undercliff already shattered, but by this landslip pushed forward about forty or fifty feet towards the sea, and much fissured by the movement. B a craggy peak, formerly seventy feet high, now only twenty. A a fresh reef which the vast weight of the shattered cliff has, in sliding downward and by pressing on soft clays, raised up from the bottom of the sea. The beds in order of position are *z* lias, *y* lias clay, *x* loose sand about a hundred feet in depth, *b* sandstone with chert, and *a* the chalk beds.

The changes produced by this landslip are remarkable. On this coast, at Culverhole point, there was, up to Dec. 24, 1839, a solitary crag in the form of a peak, well known as a landmark. It was then seventy feet high, it is now only twenty. The main cliff was then fifty feet from this peak, they are now close to each other. As I have just intimated, the immense weight of beds and rocks saturated with rains must have exerted great pressure upon the lias clays beneath them. So great was this pressure that a tract of the underlying stratum, at that time covered with shingles and boulders on the shore, was actually forced to rise upward with all its boulders on its surface as represented in A, fig. 73. The portion of stratum thus forced upward forms now an elevated ridge along the shore, about a mile long and forty feet wide, covered with huge blocks of rock, which are clothed with sea-weed and coralline shells.

Facts of this class are useful in geology, because they show to how great an extent the power of atmospheric waters can act in loosening and undermining rocks. They prove that water may be regarded as one of the most powerful and subtle agents which nature wields, and that its activity produces some of the greatest changes, and some of the most remarkable phenomena in physical history. Its results are more stupendous in mountain districts than they can be in an undulating district like that just described in Dorsetshire.

You may have listened to tales and narratives about avalanches in Alpine countries, and you may have shuddered at their destructive and fearful effects; but you will find that the ravages of landslips, or rather mountain slips, are far more terrible and devastating than those of avalanches.

Mountain slips are the results of a very gradual process in the agency of atmospheric moisture, and can take place only in hills that are stratified, and also composed of different layers of rock. In mountains of granite, porphyry, and trap, fragments of rock may become dislocated, and may roll down in enormous masses; but it is only in stratified mountains that immense quantities of soils and stones, and clays and sands, can, as if they were avalanches of earth, slip into valleys and glens, and bury for ever fields and forests, houses and their inhabitants.

When a lofty mountain is composed of strata of different structures, or of beds of different mineral character, it may be

that a rock of hard compact stone may rest upon a loose and gravelly bed. Through the porousness of the upper strata, or through cracks and chinks in their beds, the waters from rain and snow will find their way down to the looser gravelly bed. There the infiltrating water will dissolve and loosen the firm component particles, which enabled the bed to hold up the rocks that rested on it. As this becomes either less firm, or perhaps removed, the upper rocks will necessarily sink down upon the lower stratum.

If the slope of the mountain towards a valley be considerable, it may be that the stratified beds will not sink much; for the percolating water will perhaps be drained off in the superficial soil. But if the slope of the mountain be nearly abrupt, and if the dip of the stratified beds towards the valley be very great, it is likely that a whole bed or stratum may, in one mass, be slipped and projected to a lower level with terrific force.

Imagine such a stratum, in a lofty mountain, to be resting on an inclined bed of impervious clay that has been made moist and slippery by percolating water. The heavy rock above will press upon the softened bed, with a tendency to slide along its slope. At first the downward sliding will be slow, but in consequence of its immense weight, increased by an accession of many tons of infiltrated water, its momentum will increase as it descends, till, in its impetuous fall, it breaks into several fragments, which roll onward and downward amid torrents of stones and clouds of dust, and overwhelm a fertile valley with the ruins of a mountain shattered into atoms. These catastrophes have often been witnessed by the inhabitants of Alpine villages in Switzerland and the Tyrol, where pasture lands and vineyards, human dwellings and their tenants, have been buried with terrible devastations.

Between Chiavenna and St. Mauritz is Bergel Thal, or Val Bregaglia, once a scene of beauty and industry, and studded with charming villas. From this valley rises Mount Conto. On September 4, 1618, a slip from this mountain slid down to the valley, buried the town of Pleurs, and killed all its inhabitants 2,430 in number. The rubbish and the debris formed by the shattered fragments filled the valley, and blocked up the river Maira, which formed a lake, until it was able to force a passage for its stream. Pleurs and its villas now lie under a heap of rubbish sixty feet deep, and the rubbish is now grown over with chestnuts. For several years the shepherds on Mount Conto had observed that great cracks and chasms were being formed in the surface of the hill, but never apprehended that they signified any danger or gave any warning. At the close of August there had been heavy rains for several days incessantly. The 4th of September was "a clear sunshine after rain:" but on that calm and brilliant day, tremendous masses of the mountain slid down with a loud and dreadful crash, and overwhelmed villages, homesteads, and inhabitants in one grave, from which there was no escape.

In another part of Switzerland, at the junction of the cantons of Vaud and Valais, there are rising, from a tableland, the celebrated peaks called the Diablerets, or the Devil's Horns, whose elevation is from ten to eleven thousand feet high. In 1713, there were five of these peaks, which are composed of deranged beds of limestone, dipping rapidly towards the valley, and resting upon sloping beds of soft shale. At present, there are only two peaks. In 1714, immense masses of one of the peaks slipped down and buried alive many men and cattle. In 1749, another landslip fell, and checked the course of the river Tisern, which, in consequence, has formed two small lakes. Before the landslip of 1714, the herdsmen and shepherds felt that the ground, on which they were pasturing their cattle, trembled under their feet at every tread. Some of them immediately ran away, but others dallied till the moving mass buried them and their herds together. The result of these landslips is, that this district, for the space of about six miles, is covered with heaps of rubbish and rocks, the wrecks of these landslips. The accumulated debris is said to cover a space of fully eight miles. Three of the five peaks have already slipped down, and the two which remain, though now about ten thousand feet high, threaten to follow sooner or later. The beds of shale, forming the lower strata of the Diablerets, are incessantly disintegrated by percolating water, which is derived from the glaciers in the north east ravines, and, as these shaly beds are softened and worn away, large masses will become detached and hurled into the valley.

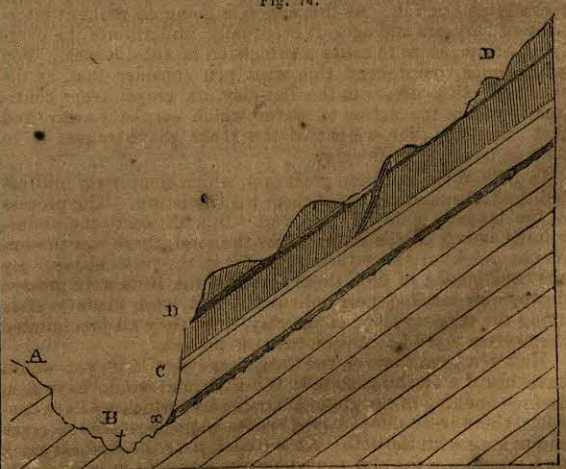
In another part of Switzerland is the valley of the Goldau, sometimes called the vale of Arth. This valley, six miles long, lies between two high mountains. On its north-east is the Rossberg, and on its south-west is the famous mount Righi. The Rossberg is 4,958 feet high, and the Righi, 5,700 feet. Observe that both the Rossberg and the Righi are stratified rocks, consisting, in the upper parts, of conglomerate breccia, called by Swiss geologists, nagelflue, or round smooth stones and pebbles cemented together by sandstone and carbonate of lime. Their summits are clothed with pasture, and in summer about 2,000 head of cattle are fed there. The middle and the lower portions of both hills are covered with forests. The Rossberg slopes abruptly towards the valley of Goldau at a declivity of more than 45 degrees.

In 1806 a remarkable and terrible slip took place in the upper portions of the Rossberg. The masses of the landslip were three miles in extent, and their fragments buried four villages with all their inhabitants. The peasants had observed for more than fifty years that, occasionally, great cracks and rents were being formed in the surface of the Rossberg. Through these chinks and gaps, water from rain and melted snow penetrated through the loose marl and clay conglomerates down to the shaly bed on which they rested, and which the dribbling rivulets that formed landsprings washed away.

On September 2, 1806, a great change took place all around. In the preceding winter, the fall of snow had been extraordinarily heavy; and in July and August, the rains had been frequent and abundant. On this day, strange sounds and unaccountable noises were heard to issue from the sides of the towering Rossberg, which were followed by copious falls of shattered masses of rock. Suddenly, a large horizontal rent or crack was seen to open across the brow of the mountain, at some distance from the summit. This horizontal rent was occasioned by the beds beneath its line sinking down upon the underlying rock that had been made soft and slippery by the infiltrated water; as they sank, all the landsprings in the side of the mountain ceased to flow. Immediately after the gap had opened, or the beds below it sunk down, the upper portion of the mountain, with all the pastures and trees, with all the cattle and herds, and with all the houses on its surface, were seen to begin to move downwards, very slowly at first, and then with a rapidity that was terrific. As the tremendous deluge of rocks, stones, earth, trees and houses, rushed towards the bottom of the valley, immense clouds of white dust, like smoke, whirled above and along its course; the descending fragments came down dashing against loose boulders in their course, and large blocks of rocks were projected and hurled forward, as if they had been discharged by a park of artillery. In the fall, the enormous mass broke into myriads of fragments, which were propelled even to the base of the opposite mountain, the Righi.

Large portions of the landslip fell with such tremendous

Fig. 74.



Landslip or Fall of the Rossberg, Switzerland, 1806.

violence into lake Lowertz that they produced great waves in the lake, which rose more than sixty feet high, and rushed with great impetuosity towards the village of Sewen, five miles off, where many houses were destroyed by their waters. The great fall took place at a point equidistant between Lake Zug and Lake Lowertz. Here the wreck of the landslip forms a great ridge studded with enormous boulders or rocks, reminding you of portions of the Trosachs of Scotland.

To assist your conception of this mountain slip, consult the diagram, fig. 74. A represents a portion of the Righi, B the valley of Goldau, D D the Rossberg, X the slope of the shaly bed worn and rendered slippery by percolating waters, C the horizontal rent that was seen in the side of the mountain just before the landslip.

The magnitude of the results will be best appreciated when you consider that the whole catastrophe took place in about five minutes. In this short time a lovely valley in high cultivation, with nearly five hundred human beings, were entombed, and the whole scene turned into a rugged desert. The extent of the mass that fell was three miles in length, more than half a mile in breadth, and about a hundred feet thick. The rush of stones and earth was accompanied with a large torrent of mud, which showed how completely the beds of the mountain had been saturated with water.

Apply all these phenomena to the cases of stratified rocks in volcanic districts, and you will easily see how the influence of atmospheric moisture upon certain beds prepares them for the action of earthquakes.

Examples of these combined actions were discovered in Calabria, during the celebrated earthquake of 1783. That district abounds with narrow valleys from 500 to 600 feet deep, and its rocks are composed of argillaceous strata or beds of clay. In these valleys the cliffs are in most parts perpendicular. At some spots the beds of the rocks were overhanging the rivers. When the beds below these projecting masses had been infiltrated and worn away by waters, the rocks would, as their support was removed, be easily thrown down by earthquake agency.

One deep valley in Calabria is called Terra Nova. During the earthquake of 1783, large masses of the flat beds of the higher cliffs were detached from each side of the glen, and hurled into the bed of the river. These beds were moved forward bodily, for the oaks, olives, and vineyards and cornfields, continued to grow in their new position at the bottom of the ravine, and appeared as little injured as the portions from which they were severed, and which are now standing on each side of them, about 500 feet higher and nearly a mile distant from them.

On the same occasion, two tenenents near Mileto, occupying land about a mile in length and half a mile in breadth, were carried in a mass for a whole mile down the valley. To the same distance a thatched cottage, surrounded by large olive trees and mulberry trees, was removed, and most of the trees remained upright and uninjured.

In these cases, as well as in those described in Dorsetshire and Switzerland, the beds of the sedimentary rocks had been long undermined by infiltrating rivulets, which, after the landslips, became all exposed to the open air.

LESSONS IN ALGEBRA.—No. IV.

The following are the answers to the exercises in our last lesson:—

EXAMPLES FOR PRACTICE.

Answers:—(1.) $2ab+4xy+10dfg$; (2.) $-25ax-6ab-7m$; (3.) $-3ay-31bx-9bc$; (4.) $2ab-16xy-4d$; (5.) $11a-3x+4df+18xyz$; (6.) $17bc-42xy+23gh$; (7.) $21ax+y+ac-ay-4a+bc-x+yz+dc$; (8.) $21x+40xy-13a+5bc-10ab-42$; (9.) $5xy-29ab$; (10.) $13ay-2ax$; (11.) $a+b+c+d-f+g-h-xy$; (12.) $13ab+4xy-6ad$; (13.) $-(a-b+c+d-f-gh)$; (14.) $-(-ab+cdx-df+x+y-ghf+bc-xyz)$; (15.) $xx+2bb$; (16.) $5yy+24aaa$; (17.) $16(x+y)-10(a+b)$; (18.) $-13(a+b)-52(x+y)$; (19.) $a+3aa+7ba$; (20.) $x-2xx-11xxx$; (21.) $17+17x$; (22.) $-7a-33y$; (23.) $5xy-5ax+ay-my-52+7df$; (24.) $87a$.

ADDITIONAL EXERCISES.

Answers:—(1.) $4x^4z^2-a^6+b^6$; (2.) $8x^5y+8xy^3$; (3.) $a^3-4a^4+11a^5$; (4.) $2a$; (5.) $2a^3+a^2x+2ax^2-x^3$; (6.) $6x^2+2$; (7.) $(a-c)x^2+(b+d)y^2$.

MULTIPLICATION.

Art. 67.—Ex. 1. What will 4 oranges cost at x pence each?

Here, we say if *one* orange costs x pence, 4 oranges will cost 4 times as much; they will therefore cost $4x$ pence; and this is the answer.

Ex. 2.—How much can a man earn in 5 months at a pounds per month? Reasoning as before, we have $a\times5=5a$ pounds for the answer.

Now $4x$ is equal to $x+x+x+x$; and $5a=a+a+a+a+a$.

68. *Hence, the repeated addition of a quantity to itself is called* multiplication. From this definition of multiplication, it is manifest that the *product* is a quantity of the same kind as the *multiplicand*.

69. *It is plain, therefore, that multiplying by a whole number is taking the multiplicand as many times as there are units in the multiplier.* Thus multiplying a by 1, is taking the multiplicand *once*, as a.

Multiplying a by 2, is taking the multiplicand *twice*, as $a+a$, &c.

70. *On the other hand, multiplying by a* fraction *is taking a certain* portion *of the multiplicand as many times as there are like portions of a unit in the multiplier.* Thus

Multiplying a by $\frac{1}{5}$, is taking $\frac{1}{5}$ of the multiplicand *once*, as $\frac{1}{5}a$.

Multiplying a by $\frac{2}{5}$, is taking $\frac{1}{5}$ of the multiplicand *twice*, as $\frac{1}{5}a+\frac{1}{5}a$.

71. *Multiplying two or more letters together, is writing them one after the other, either with or without the sign of multiplication between them*; see Art. 23. Thus b multiplied into c is $b\times c$, or $b\,.\,c$, or bc. And the product of x into y, into z, is $x\times y\times z$, or $x\,.\,y\,.\,z$, or, as it is more commonly written, xyz. Also the product of am into xy is $amxy$; and of abc into xyz, is $abcxyz$.

72. There will be no difference as to the result *in whatsoever order* the letters are arranged. Thus the product of ba is the same as that of ab; and 3 times 5 is equal to 5 times 3. In like manner, the product of a, b, and c, is abc, bac, cab, or cba. It is more convenient, however, to place the letters in *alphabetical* order.

73. *When the letters have numerical* co-efficients, *these must be multiplied together, and prefixed to the product of the letters.*

Ex. 1.—Multiply $3a$ into $2b$.

Here the answer is $6ab$, For if a into b is ab, then 3 times a into b is evidently $3ab$; and if, instead of multiplying by b, we multiply by *twice* b, the product must be *twice* as great, that is, $2\times3ab$, which is $6ab$.

Ex. 2.—Multiply	$12hy$	3. $3dh$	4. $2ad$	5. $7bdh$	6. $3ay$
By	$2rx$	my	$13hmg$	x	$8mx$
Product:	$24hrxy$	$3dhmy$	$26adghm$	$7bdhx$	$24amxy$

74. If either of the factors consists of figures *only*, these must be multiplied into the co-efficient of the other factor, and the letters annexed. Thus $3ab$ into 4, is $12ab$; 36 into $2x$, is $72x$; and 24 into hy, is $24hy$.

From the preceding rules we have the general one, that when factors are to be multiplied, the product will be the same in whatever order the operation is performed.

75. If the multiplicand be a *compound* quantity, *each of its terms* must be multiplied into the multiplier. Thus the product of $b+c+d$ into a, is $ab+ac+ad$. For the whole of the multiplicand is to be taken as many times as there are units in the multiplier.

7. Multiply	$d+2xy$	8. $2h+m$	9. $3hl+1$	10. $2hm+3$
By	$3b$	$6dy$	my	$4b$
Product:	$3bd+6bxy$	$12dhy+6dmy$	$3hlmy+my$	$8bhm+12b$

76. It must be carefully observed that the preceding instances are not to be confounded with those in which several *factors* are connected by the sign $\times$, or by a point. In the latter case, the multiplier is to be written before the other factors *without being repeated*. The product of $b\times d$ into a, is $ab\times d$, and not $ab\times ad$. For $b\times d$ is bd, and this into a, is abd. (Art. 71.) The expression $b\times d$ is not to be considered like

$b+d$, a *compound quantity* consisting of two terms. Different terms are always separated by + or −. (Art. 19.) The product of $b\times h\times m\times$ into a, is $a\times b\times h\times m\times y$, or $abhmy$. But $b+h+m+y$ into a is $ab+ah+am+ay$.

77. If *both* the factors are compound quantities, *each term in the multiplier must be multiplied into each term in the multiplicand.* Thus $(a+b)$ into $(c+d)$ is $ac+ad+bc+bd$. For the units in the multiplier $a+b$, are equal to the units in a, added to the units in b. Therefore the product produced by a, must be added to the product produced by b. Whence, the product of $c+d$ into $a+b$, is $ac+ad+bc+bd$.

For, the product of $c+d$ into a is $ac+ad$; and the product of $c+d$ into b is $bc+bd$; by (Art. 76.); therefore the product of $c+d$ into $a+b$ is $ac+ad+bc+bd$.

Ex. 11.—Multiply $3x+d$ By $2a+hm$

Product: $6ax+2ad+3hmx+dhm$

12. $4ay+2b$ by $3c+rx$

$12acy+6bc+4arxy+2brx$

13. Multiply $a+1$ By $3x+4$

Product: $3ax+3x+4a+4$

14. $2b+7$ by $6d+1$

$12bd+42d+2b+7$.

15. Multiply $d+rx+h$ by $6m+4+7y$. Ans. $6dm+6rmx+6hm+4d+4rx+4h+7dy+7rxy+7hy$.

16. Multiply $7+6b+ad$ by $3r+4+2h$. Ans. $21r+18br+3adr+28+24b+4ad+14h+12bh+2adh$.

78. When several terms in the product are *alike*, it will be expedient to *set one under the other*, and then to unite them by the rules for reduction in addition, as in the following examples:—

Ex. 17.—Multiply $b+a$ By $b+a$

Product: $bb+2ab+aa$.

18. $b+c$ by $b+c+3$

$bb+2bc+5b+cc+5c+6$

19. Multiply $a+y+1$ By $3b+2x+7$

Product: $3ab+3by+3b+2ax+2xy+2x+7a+7y+7$

20. Multiply $3a+d+4$ by $2a+3d+1$. Ans. $6a^2+11ad+11a+3d^2+13d+4$.

21. Multiply $b+cd+2$ by $3b+4cd+7$. Ans. $3b^2+7bcd+13b+4c^2d^2+15cd+14$.

22. Multiply $3b+2x+h$ by $a\times d\times 2x$. Ans. $6abdx+4adx^2+2adhx$.

79. It is plain that when the multiplier and multiplicand consist of any quantity, *repeated as a factor*, this factor will be repeated in the product as many times as it is in the multiplier and multiplicand together.

23. Multiply $a\times a\times a$ By $a\times a$

Product: $a\times a\times a\times a\times a=aaaaa$, or a^5.

Here a is repeated *three times* as a factor in the multiplicand, and twice in the multiplier; hence, it is repeated *five times* in the product.

24. What is the product of $bbbb$ by bbb? Ans. $bbbbbbb$, or b^7.

25. What is the product of $aa\times aaa\times aaaa$ by $aaa\times aaaa$? Ans. $aaaaaaaaaaaaaaaa$, or a^{16}.

80. It is also plain, from Art. 74, that the *numeral co-efficients* of several factors should be brought together and made into one factor by multiplication. Thus to multiply $2a\times 3b$ by $4a\times 5b$, gives the product of $2a\times 3b\times 4a\times 5b$, or $120aabb$. For the co-efficients are *factors* (Art. 24), and it is immaterial in what *order* these are arranged. Therefore $2a\times 3b\times 4a\times 5b=2\times 3\times 4\times 5\times a\times a\times b\times b=120aabb$.

26. What is the product of $3x\times 4x\times 5y$ by $2y\times 4z$? Ans. $480xyyz$.

27. What is the product of $3a\times 4bh$ by $5m\times 6y$ Ans. $360abhmy$.

28. What is the product of $4b\times 6d$ by $2x+1$? Ans. $48bdx+24bd$.

The product of two or more powers of the same quantity, is expressed by writing that quantity with an index equal to the SUM *of the indices of the proposed powers.* Thus, the product of a^2 and a^3 is a^5; and the continual product of x^3, x^4 and x^6 is x^{13}. So likewise the product of x^m and x^n is x^{m+n}, and that of x and x^n is x^{n+1}; and, on the same principle, the product of x^m and x^n is x^{m-n}. The reason of this is evident from Art. 79. Thus a^2 and a^3 are the same as aa and aaa; the product of which is $aaaaa$ or a^5; the index 5 being the sum of the indices 2 and 3, the numbers which show how often a is used as a factor in the given powers.

RULE FOR SIGNS IN THE PRODUCT.

81. The rule is that + into + produces +; − into + gives −; + into − gives −; and − into − gives +; or, in words, *plus* multiplied by *plus* gives *plus*; *minus* by *plus* gives *minus*; *plus* by *minus* gives *minus*; and *minus* by *minus* gives *plus*; that is, *if the signs of the factors are* ALIKE, *the sign of the product will be plus, or affirmative; but if the signs of the factors are* UNLIKE, *the sign of the product will be minus, or negative.*

82. The first case, viz., that of + into +, needs no explanation, being the same as that of ordinary numbers.

83. The second case is − into +, that is, the multiplicand is negative, and the multiplier positive. Thus, $-a$ into $+4$ is $-4a$. For the repetitions of the multiplicand are, $-a-a-a-a=-4a$.

30. Multiply $2a-m$ By $3h+x$

Prod.: $6ah-3hm+2ax-mx$

31. $h-3d+1$ by $2y$

$2hy-6dy+8y$

Multiply 32. $a-2-7d-x$ By $3b+h$

Prod.: $3ab-6b-21bd-3bx+ah-2h-7dh-hx$.

84. In the two preceding cases, the positive sign prefixed to the multiplier shows, that the repetitions of the multiplicand are to be *added* to the other quantities with which the multiplier is connected. But in the two remaining cases, the negative sign prefixed to the multiplier, indicates that the sum of the repetitions of the multiplicand are to be *subtracted* from the other quantities. (Arts. 70, 71.) This subtraction is performed, at the time of multiplying, by making the sign of the product opposite to that of the multiplicand. Thus $+a$ into -4 is $-4a$. For the repetitions of the multiplicand are, $+a+a+a+a=+4a$. But this sum is to be *subtracted* from the other quantities with which the multiplier is connected. It will then become $-4a$. (Art. 59.) Thus in the expression $b-(4\times a)$ it is manifest that $4\times a$ is to be subtracted from b. Now $4\times a$ is $4a$, that is, $+4a$. But to subtract this from b, the sign + must be changed into −. So that $b-(4\times a)$ is $b-4a$. And $a\times -4$ is therefore $-4a$.

Again, suppose the multiplicand is a, and the multiplier $(6-4)$. As $(6-4)$ is equal to 2, the product will be equal to $2a$. This is *less* than the product of 6 into a. To obtain, then, the product of the compound multiplier $(6-4)$ into a, we must *subtract* the product of the negative part from that of the positive part. Thus, multiplying a by $6-4$ is the same as multiplying a by 2. And the product of the former, viz., $6a-4a$, is the same as the product of the latter, viz., $2a$. But if the multiplier be $(6+4)$, the two products must be *added*. Thus, multiplying a by $6+4$, is the same as multiplying a by 10. And the product of the former, viz., $6a+4a$, is the same as the product of the latter, viz., $10a$.

This shows at once the difference between multiplying by a *positive* factor, and multiplying by a *negative* one. In the former case, the sum of the repetitions of the multiplicand is to be *added to*, in the latter it is to be *subtracted from*, the other quantities with which the multiplier is connected. (Art. 41.)

33. Multiply $a+b$
By $b-x$
Product: $ab+b^2-ax-bx$

34. Multiply $3dy+hx+2$
By $mr-ab$
Product: $3dmry+hmrx+2mr-3abdy-abhx-2ab.$

35. Multiply $3h+3$
By $ad-6$
Product: $3adh+3ad-18h-18.$

84. If *two negatives* be multiplied together, the product will be affirmative: $-4\times-a=+4a$. In this case, as in the preceding, the repetitions of the multiplicand are to be *subtracted*, because the multiplier has the negative sign. These repetitions, if the multiplicand is $-a$, and the multiplier -4, are $-a-a-a-a=-4a$. But this is to be subtracted by changing the sign. It then becomes $+4a$.

Suppose $-a$ is multiplied by $(6-4)$. As $6-4=2$, the product is evidently *twice* the multiplicand, that is, $-2a$. But if we multiply $-a$ into 6 and 4 separately; $-a$ into 6 is $-6a$, and $-a$ into 4 is $-4a$. (Art. 83.) As in the multiplier, 4 is to be subtracted from 6; so, in the product, $-4a$ must be subtracted from $-6a$. Now, $-4a$ becomes by subtraction $+4a$. The whole product then is $-6a+4a$, which is equal to $-2a$. Or thus, multiplying $-a$ by $6-4$, is the same as multiplying $-a$ by 2; and the product of the former, viz., $-6a+4a$, is equal to the product of the latter, viz., $-2a$. Hence the general rule may be shortly expressed, thus:—*When quantities are multiplied by a positive term, their signs are retained in the product; but when by a negative one, they are changed.*

85. It is often considered a great mystery, that the product of two negatives should be affirmative. But it amounts to nothing more than this, that the subtraction of a negative quantity is equivalent to the addition of an affirmative one (Arts 58, 59), and therefore that the *repeated* subtraction of a negative quantity, is equivalent to the *repeated* addition of an affirmative one. So, taking off from a man's hands a debt of ten pounds every month, is adding ten pounds a month to the value of his property.

36. Multiply $a-4$ into $3b-6$. Ans. $3ab-12b-6a+24$.

37. Multiply $3ad-ah-7$ into $4-dy-hr$. Ans. $12ad-4ah-28-3ad^2y+adhy+7dy-3ahdr+ah^2r+7hr$.

38. Multiply $2hy+3m-1$ into $4d-2x+3$. Ans. $8dhy+12dm-4d-4hxy-6mx+2x+6hy+9m-3$.

86. Positive and negative terms may frequently *balance* each other, so as to disappear in the product. (Art. 54.)

39. Multiply $a-b$
By $a+b$
$aa-ab$
$+ab-bb$
Product: $aa\ *\ -bb.$

40. $mm-yy$
$mm+yy$
$mmmm-mmyy$
$+mmyy-yyyy$
Product: $mmmm\ *\ -yyyy$

41. Multiply $aa+ab+bb$
By $a-b$
$aaa+aab+abb$
$-aab-abb-bbb$
$aaa\ *\ *\ -bbb$

87. For many purposes, it is sufficient merely to *indicate* the multiplication of compound quantities, without actually multiplying the several terms. Thus (Art. 23), the product of

$a+b+c$ into $h+m+y$, is $(a+b-c)\times(h+m+y)$.

42. What is the product of $a+m$ into $h+x$ and $d+y$? Ans. $(a+m)(h+x)(d+y)$.

By this method of representing multiplication, an important advantage is often gained, in preserving the factors distinct from each other. When the several terms are multiplied in form, the expression is said to be *expanded*.

43. What does $(a+b)\times(c+d)$ become when expanded? Ans. $ac+ad+bc+bd$.

88. With a given multiplicand, the less the multiplier, the less will be the product. If, then, the multiplier be reduced to *nothing*, the *product* will be *nothing*. Thus $a\times0=0$. And if 0 be one of *any number* of fellow-factors, the product of the whole will be nothing.

44. What is the product of $ab\times c\times3d\times0$? Ans. 0.

45. And $(a+b)\times(c+d)\times(h-m)\times0$? Ans. 0.

LESSONS IN FRENCH.—No. LXII.

By Professor Louis Fasquelle, LL.D.

LIST OF IRREGULAR VERBS, &c., (*continued from page* 141).

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
Battre, 4. *to beat* aux: avoir irregular.	battant battu, *f.* e.	je bats tu bats il bat n. battons v. battez ils battent	je battais tu battais il battait n. battions v. battiez i. battaient	je battis tu battis il battit n. battîmes v. battîtes ils battirent	je battrai tu battras il battra n. battrons v. battrez i. battront	je battrais tu battrais il battrait n. battrions v. battriez i. battraient	bats q. batte battons battez q. battent	je batte tu battes il batte n. battions v. battiez i. battent	je battisse tu battisses il battît n. battissions v. battissiez i. battissent
Boire, 4. *to drink* aux. avoir irregular.	buvant bu, *f.* e.	je bois tu bois il boit n. buvons v. buvez ils boivent	je buvais tu buvais il buvait n. buvions v. buviez i. buvaient	je bus tu bus il but n. bûmes v. bûtes ils burent	je boirai tu boiras il boira n. boirons v. boirez i. boiront	je boirais tu boirais il boirait n. boirions v. boiriez i. boiraient	bois q. boive buvons buvez q. boivent	je boive tu boives il boive n. buvions v. buviez i. boivent	je busse tu busses il bût n. bussions v. bussiez ils bussent
Bouillir, 2. *to boil*	bouillant bouilli, *f.* e.	je bous tu bous il bout n. bouillons v. bouillez i. bouillent	je bouillais tu bouillais il bouillait n. bouillions v. bouilliez ils bouillaient	je bouillis tu bouillis il bouillit n. bouillîmes v. bouillîtes ils bouillirent	je bouillirai tu bouilliras il bouillira n. bouillirons v. bouillirez i. bouilliront	je bouillirais tu bouillirais il bouillirait n. bouillirions v. bouilliriez i. bouilliraient	bous q. bouille bouillons bouillez q. bouillent	je bouille tu bouilles il bouille n. bouillions v. bouilliez il bouillent	je bouillisse tu bouillisses il bouillît n. bouillissions v. bouillissiez i. bouillissent
Bourreler, 1. *to torment*	bourrelant bourrelé, *f.* e.	je bourrèle § 46, (5)	je bourrelais	je bourrelai	je bourrèlerai	je bourrèlerais	bourrèle	je bourrèle	je bourrelasse
Braire, 1. *to bray* defective.		il brait ils braient			il braira ils brairont	il brairait ils brairaient			
Bruiner, 4. *to drizzle* unipersonal.	bruinant bruine	il bruine *it drizzles*	il bruinait *it was drizzling*	il bruina *it drizzled*	il bruinera *it will drizzle*	il bruinerait *it would drizzle*	q. bruine *let it drizzle*	q. bruine *it may drizzle*	q. bruinât *it might drizzle*

List of Irregular Verbs, &c. continued.

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
BRUIRE, 4. *to roar, rustle* defective.	bruissant	il bruit	il bruyait, *or* il bruissait ils bruyaient ils bruissaient						
CACHETER, 1. *to seal*	cachetant cacheté, *f.* e.	je cachette § 49, (4)	je cachetais	je cachetai	je cachetterai	je cachette- [rais	cachette	je cachette	je cachetasse
CEINDRE, 4. *to gird* aux. avoir irregular.	ceignant ceint, *f.* e.	je ceins tu ceins il ceint n. ceignons v. ceignez ils ceignent	je ceignais tu ceignais il ceignait n. ceignions v. ceigniez ils ceignaient	je ceignis tu ceignis il ceignit n. ceignîmes v. ceignîtes ils ceignirent	je ceindrai tu ceindras il ceindra n. ceindrons v. ceindrez ils ceindront	je ceindrais tu ceindrais il ceindrait n. ceindrions v. ceindriez ils ceindraient	ceins q. ceigne ceignons ceignez q. ceignent	je ceigne tu ceignes il ceigne n. ceignions v. ceigniez ils ceignent	je ceignisse tu ceignisses il ceignît n. ceignissions v. ceignissiez i. ceignissent
CHANCELER, 1. *to stagger*	chancelant chancelé, *f.* e.	je chancelle § 49, (4)	je chancelais *see* APPELER	je chancelai	je chancellerai	je chancelle- [rais	chancelle	je change	je changeasse
CHANGER, 1. *to change* aux. avoir § 49, (1) peculiar.	changeant changé, *f.* e.	je change tu changes il change n. changeons v. changez ils changent	je changeais tu changeais il changeait n. changions v. changiez ils changeaient	je changeai tu changeas il changea n. changeâmes v. changeâtes ils changèrent	je changerai *like* CHANTER	je changerais	change q. change changeons changez q. changent	tu changes *like* CHANTER	tu changeasses il changeât changeassions v changeassiez i. changeassent
CIRCONSCRIRE, 4. *to circumscribe*	circonscrivant circonscrit, *f.* e.	je circonscris *see* ECRIRE	je circonscri- [vais	je circonscrivis	je circonscri- [rai	je circonscri- [rais	circonscris	je circonscrive	je circonscri- [visse
CIRCONVENIR, 2. *to circumvent*	circonvenant circonvenu, *f.* e.	j. circonviens *see* VENIR	je circonve- [nais	je circonvins	je circonvien- [drai	je circonvien- [drais	circonviens	je circonvi- [enne	je circonvinsse
CLORE, 4. *to close* defective.	clos	je clos tu clos il clot			je clorai tu cloras il clora, &c.	je clorais tu clorais il clorait, &c.			
COLLÈTER, 1. *to collar*	colletant colleté, *f.* e.	je collète § 49, (5)	je colletais *see* ACHETER	je colletai	je collèterai	je collèterais	collète	je collète	je colletasse
COMBATTRE, 4. *to combat*	combattant combattu, *f.* e.	je combats *see* BATTRE	je combattais	je combattis	je combattrai	je combattrais	combats	je combatte	je combattisse
COMMETTRE, 4. *to commit*	commettant commis, *f.* e	je commets *see* METTRE	je commettais	je commis	je commettrai	je commet- [trais	commets	je commette	je commisse
COMPARAÎTRE, 4. *to appear*	comparaissant comparu	je comparais *see* PAÎTRE	je comparais- [sais	je comparus	je comparai- [trai	je comparai- [trais	comparais	je compa- [raisse	je comparusse
COMPLAIRE, 4. *to humour*	complaisant complu	je complais *see* PLAIRE	je complaisais	je complus	je complairai	je complairais	complais	je complaise	je complusse
COMPRENDRE, 4. *to understand*	comprenant compris, *f.* e.	je comprends *see* PRENDRE	je comprenais	je compris	je compren- [drai	je compren- [drais	comprends	je comprenne	je comprisse
COMPROMETTRE, 4. *to compromise*	compromettant compromis *f.* e.	je compromets *see* METTRE	je compromet- [tais	je compromis	je compromet- [trai	je compromet- [trais	compromets	je compro- [mette	je compro- [misse
CONCLURE, 4. *to conclude* aux. avoir irregular.	concluant conclu, *f.* e.	je conclus tu conclus il conclut n. concluons v. concluez i. concluent	je concluais tu concluais il concluait n. concluions v. concluiez i. concluaient	je conclus tu conclus il conclut n. conclûmes v. conclûtes ils conclurent	je conclurai tu concluras il conclura n. conclurons v. conclurez ils concluront	je conclurais tu conclurais il conclurait n. concluriens v. concluriez i. concluraient	conclus q. conclue concluons concluez q. concluent	je conclue tu conclues il conclue n. concluions v. concluiez ils concluent je conclure	je conclusse tu conclusses il conclût n. conclussions v. conclussiez ils conclussent je conclurusse
CONCOURIR, 2. *to concur*	concourant concouru, *f.* e	je concours *see* COURIR	je concourais	je concourus	je concourrai	je concourrais	concours	je conduise	je conduisisse
CONDUIRE, 4. *to conduct* aux. avoir irregular.	conduisant conduit, *f.* e.	je conduis tu conduis il conduit n. conduisons v. conduisez ils conduisent	je conduisais tu conduisais il conduisait n. conduisions v. conduisiez i. conduisaient	je conduisis tu conduisis il conduisit n. conduisîmes v. conduisîtes ils conduisirent	je conduirai tu conduiras il conduira n. conduirons v. conduirez ils conduiront	je conduirais tu conduirais il conduirait n. conduirions v. conduiriez i. conduiraient	conduis q. conduise conduisons conduisez q. conduisent	tu conduises il conduise n. conduisions v. conduisiez ils conduisent	tu conduisisses il conduisît n. conduisissions v. conduisissiez i. conduisissent
CONFIRE, 4. *to preserve* aux. avoir irregular.	confisant confit, *f.* e.	je confis tu confis il confit n. confisons v. confisez i. confisent	je confisais tu confisais il confisait n. confisions v. confisiez i. confisaient	je confis tu confis il confit n. confîmes v. confîtes ils confirent	je confirai tu confiras il confira n. confirons v. confirez ils confiront	je confirais tu confirais il confirait n. confirions v. confiriez ils confiraient	confis q. confise confisons confisez q. confisent	je confise tu confises il confise n. confisions v. confisiez i. confisent	je confisse tu confisses il confît n. confissions v. confissiez ils confissent
CONGELER, 1. *to congeal*	congelant congelé, *f.* e.	je congèle § 49, (5)	je congelais	je congelais	je congèlerai	je congèlerais	congèle	je congèle	je congelasse
CONJOINDRE, 4. *to conjoin*	conjoignant conjoint, *f.* e.	je conjoins *see* CEINDRE	je conjoignais	je conjoignis	je conjoindrai	je conjoin- [drais	conjoins	je conjoigne	je conjoignisse
CONNAÎTRE, 4. *to know* aux. avoir irregular	connaissant connu, *f.* e.	je connais tu connais il connaît n. connaissons v. connaissez i. connaissent	je connaissais tu connaissais il connaissait n. connaissions v. connaissiez i. connais- [saient	je connus tu connus il connut n. connûmes v. connûtes i. connurent	je connaîtrai tu connaîtras il connaîtra n. connaîtrons v. connaîtrez ils connaîtront	je connaîtrais tu connaîtrais il connaîtrait n. connaîtrions v. connaîtriez i. connaîtraient	connais q. connaisse connaissons connaissez q. connaissent	je connaisse tu connaisses il connaisse n. connaissions v. connaissiez ils connaissent	je connusse tu connusses il connût n. connussions v. connussiez ils connussent
CONQUÉRIR, 2. *to conquer*	conquérant conquis, *f.* e.	je conquiers *see* ACQUERIR	je conquérais	je conquis	je conquerrai	je conquerrais	conquiers	je conquière	je conquisse
CONSENTIR, 2. *to consent*	consentant consenti, *f.* e.	je consens *see* SENTIR	je consentais	je consentis	je consentirai	je consenti- [rais	consens	je consente	je consentisse

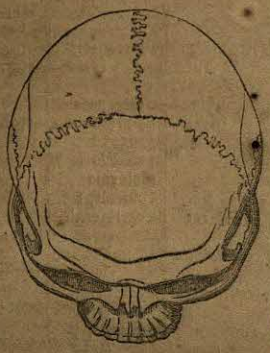
LESSONS IN GEOGRAPHY.—No. XXVI.

(*Continued from p.* 144.)

On this observation as a basis, is founded the methods of estimating the size and shape of the skull, from which it is supposed that the intellectual capacity can be determined, as the differences among men in this respect are conceived to depend on their differences in the former respect. The measurement of the facial angle, the determination of the size of the cranium, the size and the variable inclination of the face, have all led to the establishment of individual differences among men, but which are all comprehended between two extreme limits. Thus 85 degrees, which expresses the maximum size of the facial angle, belongs in general to individuals and to nations of the highest intelligence, such as the Europeans; and 75 degrees, which expresses the minimum size of the facial angle, belongs to those of the lowest intellectual development, such as are seen in individuals of all nations, and also among whole nations, namely, the negroes of Oceanica and Africa.

Fig. 1.

Fig. 2.



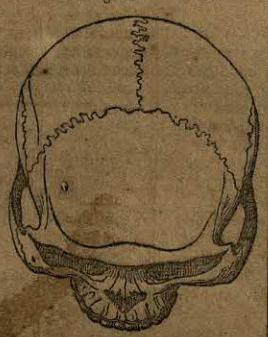
The measurement of the skull enables us to determine with greater exactness the differences which are observed among men, at least, in its principal dimensions. The following are some of the results which have been obtained:—

SKULLS OF MEN BELONGING TO THE DIFFERENT RACES.

Races.	*Diameter from front to back.*	*Diameter from side to side.*	*Anterior curve.*
Caucasian	184	125	274
Mongolian	173	125	270
Ethiopian	183	112	268
Malayan	170	125	266
American	170	125	266

Fig. 3.

Fig. 4.



By the *anterior curve*, in these measurements, is understood the curve which is measured from the anterior edge of the hole of the one ear, along the eyebrows, to the corresponding point of the other ear. These measurements are also taken as a mean of the measurements of a great variety of individuals belonging to each race. As an instance of a nation belonging to the *Caucasian* race, let us take the measurements which have been given of the heads of the French:—

	Maximum.	*Minimum.*
Diameter from front to back	206	171
Diameter from side to side	155	127
Anterior curve	318	280

All these measurements of the skull are taken in French *millimetres*, 25 of which nearly make an inch, or more correctly 25.4; so that dividing any of these measurements by these numbers, you have the answer in English inches, more or less correctly according as you take 25.4 or 25 for the divisor. The preceding results divide mankind into the principal classes,

Fig. 5.

according to the size of the skull and the development of the forehead, and consequently according to their intellectual power, if there be any truth in this department of phrenology. Although flattered by these measurements ourselves, that of the maximum skull among the French being almost exactly the same as our own, we cannot put implicit faith in the story which they tell regarding the corresponding intellectual power, of which they are supposed to be the index. At all events,

Fig. 6.

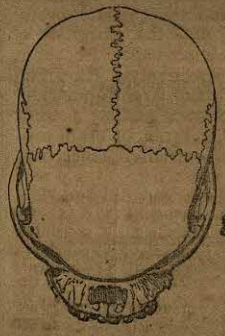
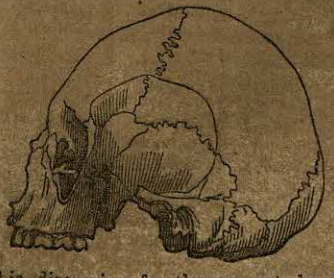


Fig. 7.

we cannot acquiesce in the mapping out of the skull itself into a given number of different organs, with all the gravity, and little of the certainty of mathematical demonstration. We

Fig. 8.



shall close this discussion for the present, by directing our readers to the consideration of the several representations of the skulls of which we have just given the measurements. The

profile of the *Caucasian skull*, in fig. 1. is that of a *Greek*; it shows the approach to the perpendicular, in the direction of the facial angle; the same skull is seen *vertically* in fig. 2., that is, resting on a table with the crown vertical. The profile of the *Mongolian* skull, is seen in fig. 3; and the *vertical* view in fig. 4. The profile of the *Ethiopian* skull is exhibited in that of a *negro*, fig. 5. and the *vertical* view in fig. 6. The profile of the *Malayan* skull is seen in fig. 7; and the profile of the *American* skull in fig. 8.

The differences in size and shape which exist in the skulls of different races can be approximately determined by the inspection of them under different points of view. Inspected in profile, the skull of the Caucasian race, typified in that of the Greek, fig. 1. presents an example of the finest development, in its globular shape, and in the straight or vertical direction of the face, which makes the facial angle nearly 90°. Viewed in profile, the skull of the Ethiopian race, typified in that of the Negro, presents a striking contrast to the former, in the respects which we have just mentioned. If we examine the upper part of the skulls of different races, as placed on a table, figs. 2, 4, and 6, we can form a more correct estimate of the shape and dimensions of the oval-like curve which limits and describes the contour of the cranium. Blumenbach, who examined a vast variety of human skulls, divided the whole into three typical forms, which he considered as characteristic of three distinct races of men, and which a single glance will discover in the figures to which we have referred above; thus, indeed, a better idea of their individuality will be obtained than by a laboured description. All the differences in the shapes of the skull are summed up in these two, the comparative size of the whole, and the comparative size of a part, corresponding to the differences in the size of the brain which is contained in these parts, and expressing relative inequalities in intellectual capacity. It would be important if more careful researches were to confirm, in regard to the various races of men, what is considered as well established in respect to individuals, viz., that there is really a connexion between the size of the skull, the size of the brain, and intellectual development. In order to throw light on this subject, a French physician, not content with exterior measurements, gauged the skull and weighed the brain. Among his countrymen, he found the mean capacity of the skull about 95 cubic inches; and the extremes of capacity, that is, the maximum and minimum capacities, about 112 cubic inches and 85 cubic inches respectively. He found the mean weight of the brain about 3 pounds avoirdupois, and the extreme weights of the brain 4 pounds and 2¼ pounds respectively. The mean weight of the cerebrum, or brain properly so called, that is, the supposed seat of intelligence, was about 2⅔ pounds.

The differences in the human face, which do not depend on the shape and size of the forehead, are referred to the variable projection and inclination of the organs of mastication, the teeth and jaws. In the case of the largest development of these organs, the two jaws, with the teeth they contain, are like two inclined planes in front, the junction of which at an obtuse angle, causes the lips and the mouth to project. From this prominence of the front teeth and the mouth, it follows that the plane of the face by its obliquity diminishes the facial angle; and, on either side of the line of projection of the mouth, the face runs off in a double inclined plane, upwards towards the forehead, and downwards towards the chin. The greater development of the palatal arch occasions an elongation (lengthening) in the oval of the base of the skull in the part which belongs to the face, and throws back the occipital* aperture from the centre of the oval. These effects of the projecting development of the face give to the head of man a very particular form, called *prognathic* (from the Greek pro, *before*, and gnathos *the jaw*), which is manifested in a very striking manner in the head of the Negro, and which has been assigned as one of the characteristics of the Ethiopian race.

The features of the countenance appear to be chiefly dependent on the development of the jaws and the cheek-bone, which change more or less its oval form, by widening it in the middle and lower parts, and by creating hollows more or less abrupt or deep, in its general outline. The interval between the eyes, very large among the nations of the Mongolian race; the shape of the nose, very short and flat among the Negroes, prominent and more or less straight among the Europeans, projecting and crooked among the Americans; the size of the lips, heavy, thick, and prominent among the Negroes; the direction of the opening of the eye-lids, which, horizontal among the greatest part of mankind, is sometimes inclined obliquely to the horizon so as to elevate the outer corner of the eye, as among the Chinese; are all characteristics, determining the differences which separate the human face more or less from the ideal type of beauty; a type to which the head of the civilised nations of Europe and Asia, is nearest in form and general appearance; and from which, that of the savage nations of Africa and Oceanica is the most remote.

* Belonging to the *occiput* or hinder part of the head.

Having laid so many skulls before our readers, for their consideration, we cannot do better to relieve their minds, than by adding a piece of poetry which we have often admired, entitled "A Fragment, found in a Case containing a human Skeleton."

Behold this ruin! 'Twas a skull
Once of ethereal spirit full!
This narrow cell was Life's retreat:
This space was Thought's mysterious seat!
What beauteous pictures fill'd this spot,
What dreams of pleasure long forgot!
Nor love, nor Joy, nor Hope, nor Fear,
Has left one trace of record here!

Beneath this mould'ring canopy
Once shone the bright and busy eye—
But start not at the dismal void!
If social Love that eye employ'd,
If with no lawless fire it gleam'd,
But through the dew of kindness beam'd;
That eye shall be for ever bright,
When stars and suns have lost their light!

Here, in this silent cavern, hung
The ready, swift, and tuneful tongue;
If falsehood's honey it disdain'd,
And where it could not praise was chain'd;
If bold in Virtue's cause it spoke,
Yet gentle Concord never broke;
That tuneful tongue shall plead for thee
When death unveils eternity!

Say, did these fingers delve the mine,
Or with its envied rubies shine?
To hew the rock or wear the gem,
Can nothing now avail to them;
But if the page of Truth they sought,
Or comfort to the mourner brought,
These hands a richer meed shall claim
Than all that waits on Wealth or Fame!

Avails it whether bare or shod
These feet the path of duty trod?
If from the bow'rs of Joy they fled
To soothe Affliction's humble bed;
If Grandeur's guilty bribe they spurn'd,
And home to Virtue's lap return'd;
These feet with angel wings shall vie,
And tread the palace of the sky!

Celui qui dit incessamment qu'il a de l'honneur et de la probité, qu'il ne nuit à personne, qu'il consent que le mal qu'il fait aux autres lui arrive et qui jure pour le faire croire, ne sait pas même contrefaire l'homme de bien.—*La Bruyère.*

Ceux qui combattent une religion ou une superstition reçue sont toujours accusés d'athéisme; mais les vrais athées, ce sont les hypocrites qui manient sans cesse les choses saintes.—*Bacon.*

Les idées sont des fonds qui ne portent intérêt qu'entre les mains du talent.—*Rivarol.*

Il n'y a qu'un bien, c'est la science; il n'y a qu'un mal, c'est l'ignorance. Celui qui connaît le bien et qui fait le mal est un insensé; l'homme sage ne croira pas savoir ce qu'il ignore: il concevra d'abord qu'il ne sait rien, et il cherchera à s'instruire.—*Socrate.*

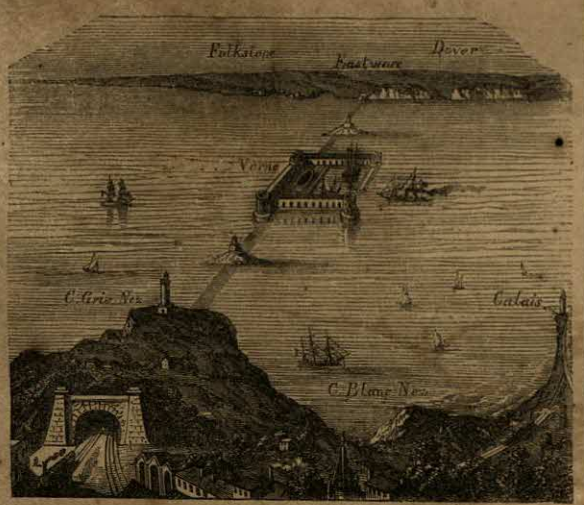
Il y a trois sortes d'ignorance: ne rien savoir, savoir mal ce qu'on sait, et savoir autre chose que ce qu'on doit savoir.—*Duclos.*

C'est la profonde ignorance qui inspire le ton dogmatique; celui qui ne sait rien croit enseigner aux autres ce qu'il vient d'apprendre lui-même; celui qui sait beaucoup pense à peine que ce qu'il dit puisse être ignoré, et parle plus indifféremment.—*La Bruyère.*

LESSONS IN MECHANICS.—No. XVI.

ROAD-MAKING AND PUBLIC WORKS—(*continued*).

In railway works, in canals, in the formation of any extensive line of road by land or water, the advisability, and in some cases the necessity, of employing tunnels is obvious. To skirt a hill would often be an expensive process, both in original outlay and in the continual waste of time in transit: to go *through* the hill is the best plan, and the most direct, and it is that at which the skill of the engineer is in no degree at fault. Of course, the method of pursuing these operations depends very much on the nature of the ground, but the success is certain. With regard to subaqueous tunnels, it has been suggested—and, however improbable the suggestion may at first sight appear, there is no reason for supposing that in a more advanced stage of science it will not be carried out—that an immense tube of iron might be passed *through* the water: not under its bed, but directly through it; and that this method would in the end be cheaper, safer, and easier than any other. It is not necessary to discuss the merits of the question in this place, where a mere brief glance at the mechanical arts can only be given; but to us there appears nothing in the scheme opposed to common sense or common experience.



SUGGESTED TUNNEL BETWEEN ENGLAND AND FRANCE.

There is a project of a tunnel across the Channel, which shall unite France and England, and bring back, as it were, that period when, according to many of our geologists, England and the Continent were joined by a neck of land. In carrying through this tunnel, the suggestion—for as yet it is only a suggestion—is to make it, like the Thames Tunnel, beneath the bed of the water. Shafts would be formed at two portions of the route, for the admission of air, and might be used as stations. At first sight, the idea of such a tunnel, more than twenty miles in length, under the sea, appears impracticable; but some of the most eminent engineers have given their opinion in favour of the scheme. Who shall say "Impossible!" when Engineer Prospero waves his scientific wand, and works his will over every natural obstacle?

The tunnel work most recently completed is that of the Underground Railway, extending from Farringdon-street to Paddington. The construction of this work involved an immense amount of patient labour, for subterranean London is crowded with the joint works of gas and water companies and sewerages, which ramify its whole extent, and intersect each other at every possible angle. London underground is one of the most curious sights which our metropolis can show, and the curiosity is not lessened by a railway of considerable length winding its way through the concealed penetralia of our city. Other great towns can show something of the same kind, however, so that London is not unique in its buried railway; three or four tunnels blindly grope their way, as it were, looking for the light, beneath Liverpool; and at Glasgow there are tunnels which, at the outskirts of that city, cut one under the other. What is there, in fact, which cannot be accomplished by our engineers in the way of tunneling? What difficulty is there which shall stand in their way, and bid defiance to their mechanical skill?

ANSWERS TO CORRESPONDENTS.

A Student in English, and his friends in Sheffield, are strongly advised to commit the lists of *prefixes* and *affixes*, with their meanings, to memory; this will give them such a hold, as it were, of the most important part of the language, as will enable them to speak and write with the greatest accuracy.—Wallasey Bideton (Liverpool): "Cassell's Latin Dictionary," edited by Dr Beard, is *the best and cheapest* which can be had.—S. Heath (Barnetby) should read Virgil before Horace. As an introduction to the Horatian metres and style, he would do well to read George Buchanan's Latin translation of the Psalms of David, a most elegant book, and written in the purest Latin, that of the Augustan age: good copies of it may be had at any old book-stall in London for sixpence.

Incola.—The sentence beginning "Regibus" is quite right.—Agricola ought to have known that *litera* in the singular is a letter of the alphabet, and that a letter in the sense of an epistle is in Latin *literæ*, being in the plural.—F. T.: An adjective pronoun is a pronoun which, like an adjective, stands with a noun, as si qui (for si aliqui) homines, *if any persons;* the genitive case of the personal pronoun ego, that is mei, *of me*, or mine, denoting possession, and so is the same as mei of what is called the possessive pronoun meus; they are indeed the same word. Similar tenses are such as, denoting corresponding times, may go together; dissimilar tenses are the reverse. Corresponding times are such as in the nature of things stand in the same relation as the presents, and the presents hold the same position in time or in regard to eternity; in the same way are the past and the past related, the future and the future; the supine differs from the infinitive chiefly in form and in construction; the supines are really nouns, the one in the accusative case, the other in the ablative; the infinitive also has sometimes the force of a noun, as Amo *legere* libros, I love *to read* books, is the same as Amo *lectionem* librorum, I love *the reading* of books.

P. O. (Barnard Castle) will fine a method of parsing laid down at p. 220, vol. I.—A. M'Kenna (Cappoquin): We think that France formerly exercised the greatest influence on the literature and science of England, but that Germany now bears the palm. On this subject, however, consult "Jeffrey's Contributions to the Edinburgh Review," or any volumes of the "Review" itself that may come in the way. We are glad that there is a "Mutual Improvement Society" in your city.—Discipulos (B. Field): Right about the lean horse. *Corporem* is not a Latin word, neither is *ingentem* applied to *bellum;* see p. 92, col. 2, vol. I. "Beard's Latin Dictionary" would certainly be of great assistance to you. Thanks for the discovery of the "*round* world;" the word translated *round* in the passages of the Psalms found in the Prayer Book, is translated *habitable* in the Bible; but its true meaning seems to be unknown, as Gesenius, the best Hebrew scholar of modern times, seems to be quite at fault as to this point.

W. C.—His lines are capable of improvement.—A Beginner (Chelsea) should get "Cassell's French Manual," price 3s., and continue the study of the "Lessons" in the "Popular Educator."—F. Buxton (Salford): Thanks for his solutions. A *millwright* should study mathematics in all its branches, both pure and mixed.—Adolphus (Hull): 12 o'clock *noon* is neither a m. nor p.m.; but the minute *after*, it is 0h. 1m. p.m.; and the minute *before*, it is 11h. 59m. a.m.—XXX. (Liverpool): It is highly requisite, in this age of strict inquiry, for every clergyman to know the Scriptures in their original tongues; and it is equally requisite for every one who desires to confute gainsayers.—Amico (Portsmouth): We shall do what we can to meet his views in relation to the European languages, &c.; but Rome was not built in a day.—J. L. and G. W. (Glasgow) will now be satisfied.—A School-girl (Southwark): Genesis i. 9. If she be of suitable age, she may get some influential friend to recommend her as a proper person for enjoying the privilege of reading in the British Museum.

R. L. A.—*Phonography* signifies *writing according to sound; stenography* means *writing in a small compass.* The origin and structure of the Low Islands, extending from the Society Islands towards Cape Horn, are the following—Coralline plants, growing at the bottom of the ocean, harbour a class of lithophytic (*stone producing*) insects, which, during their life, form round them a substance which, after their death, becomes hard as a stone. The rock-work of one generation affords a foundation to that of the succeeding, and layers are thus placed over each other till they reach the surface of the water and form islands. As soon as the rock is exposed to the air the insects quit the surface, leaving it perforated by numerous hollows; but they work for some time laterally (sideways), forming, immediately under the water, concealed table-reefs, which have given occasion to numerous and fatal shipwrecks. Meantime, from amid the interstices of the surface, plants spring up, which, on their decay, are converted into soil, and thus, by degrees, the new island is covered with luxurious vegetation.

LESSONS IN DRAWING.—No. XIII.

ON TREES AND THEIR APPENDAGES.

(*Continued from page* 139.)

In this lesson we proceed to lay before our students in drawing, the method of making proper representations of the different parts of the fir-tree. Of this kind of tree, there are several species, known in botany by the general name of *Pinus* or the Pine; and in figs. 105 and 106, are given two examples of the trunks of such trees, the former belonging to the *Pinus Sylvestris*, or *Scotch Fir*, and the other to the *Pinus Abies*, or *Spruce Fir*. By comparing these with the figures of the trunk of the oak, page 89, and of the lime, fig. 102, the student will recognise at once the distinctive character of the trunk of the fir-tree, which is not only longer than the trunk of the other trees, but of a regularly cylindrical form; he will also observe the *scaly* marking of the bark, and the small fissures and clefts on its surface. Too much labour need not be directed to these points in the drawing; but these distinct and peculiar characteristics should be clearly marked. In order to assist the student more decidedly in the tracing out of the peculiar foliage of this tree, we have given two elementary sketches, which are to precede the full drawing. In imitating fig. 107, which is but a rude sketch of a large stem, surrounded by foliage, of the *Pinus Sylvestris*, the student should begin by attending to the principal shadows on this stem, and marking in the stronger parts in the masses of the leaves, leaving out of consideration, at first, the smaller branches, and looking

Fig. 107.—*Sketch of a Stem of the Pinus Sylvestris.*

Fig. 109.—*Stem and foliage of the Pinus Sylvestris.*

upon these as details to be filled up or supplied at the next stage of the drawing. It is particularly necessary to observe this rule in copying trees from nature; for too much attention to details in the early stage of a draught from the real tree, is almost certain to lead to a confused and discouraging result. The method here recommended by us, may indeed be said to be founded on the operations of the mind in the act of observation. For no one can see every part of an object *at once*; and still less can any one see the whole of an object *at first*. The general masses of trees are all that can be seen or noticed by the artist in his first attempts; then, as his attention is directed for a longer time to the object, so its different parts are better observed, and the details more distinctly noticed and placed in the drawing to render it more complete.

Having thus made a sketch of the larger masses belonging to the tree, the student should now proceed to insert the smaller details, as indicated in the second sketch of the *stem and branches of the Pinus Sylvestris*, in fig. 108. The ramification being at this stage carefully imitated and worked into the drawing, the student may now proceed to the third and last stage. This stage is seen in fig. 109, which is a complete section of the stem and branches of the same tree; here, the gnarled and irregularly-clothed appearance of the smaller branches, and the peculiar nature of the foliage, are very distinctly shown. In completing this drawing, the student should now extend the branches to their full limits, and insert the small twigs, by making sharp and light touches. He should then complete the foliage, put in the markings or tracings that indicate the cracks or roughness of the stem, and add *force* to the shadows where it appears to be necessary. We have already remarked that each species of tree requires a peculiar *touch*, in order to fully express the character of its foliage; and you will see that in the preceding sketches and example, a sharp angular touch is presented throughout; this foliage is somewhat fan-shaped, although not formally so, and is generally

Fig. 105.—Trunk of the Pinus Sylvestris.

described as of the *zig-zag* form. This kind of *touch* is appropriate to the foliage of the fir-tree; but it is wholly unsuitable to that of the oak or the lime-tree. Enlarged examples of the leaves and cones of the fir, are shown in figs. 110, 111, 112, and 113. In your first attempt to execute the drawing, which we have so fully explained in this lesson, you may not possibly succeed to your wish; but persevere, and success is sure.

Most beginners commit an error on the side of excessive formality in the *touch*; this, of course, is to be especially avoided; but practice alone will give the skill which is necessary to enable you to hit the true medium between the drawing which is too loose and careless, and that which is too stiff and formal. It will be advisable to try the proper touch on the edge of your paper, or on a separate piece: and if you find that you succeed better in drawing to one scale or size than to another, make your copy according to that scale; but take care that the scale you select is not too small or insignificant; for *petty drawing* is always to be shunned. By *petty drawing*, of course, we mean that which exhibits an overdone neatness of subordinate parts, accompanied by poverty in the proportions, or in the masses of light and shade; and not that only which consists in mere smallness of scale or size. A large surface may be covered with a drawing executed in a *petty style*; while a small drawing may exhibit a *largeness of style*, greatly to be commended. We therefore recommend to all our students to make a proper study of the *different parts* of a drawing, so as to make one *grand whole*. A celebrated artist was in the habit of advising his pupils to "study little bits," as the surest way of attaining a mastery over large ones. The drawings we have just laid before our students, if well studied and thoroughly mastered, will enable them to draw others on a scale at least ten times larger than the present.

The method of treating masses of foliage, above exemplified, does not exclude the utility of making a slight marking of the *boundaries* of the sketch. These may be dotted *in* by a few points, as formerly directed; and it is generally advisable to do so; but not marking them so strongly as to interfere with the subsequent pencilling of the sketch. We have omitted such boundary-marks in the preceding examples, for the purpose of showing more clearly the principle of the procedure

Fig. 108.—Sketch of the Stem and Branches of the Pinus Sylvestris.

we have recommended. Those of our readers or students who may happen to reside in places where trees may be readily studied from nature, need not, of course, trust to these sketches alone. The principles we have explained manifestly correspond to the appearances of nature; and, taking these appearances as their guide, students so happily situated may go to the fountain-head at once, and *study as nature directs*.

Some account of the different species of the genus *pine*, otherwise called *coniferæ*, that is, *cone-bearing*, may now be added for the sake of information and illustration. In Europe and North America these trees constitute one of the greatest families found in the forests. The oak, the beech, the birch, and the Scotch fir live in society, and form vast forests, almost to the exclusion of other trees; thus verifying the words of the poet:—

> "In grouping beauty rise the loftiest trees,
> Secure in friendship from the blighting breeze."

The *Pinus Sylvestris*, or Scotch fir, alone constitutes noble forests among the mountainous districts of North Britain,

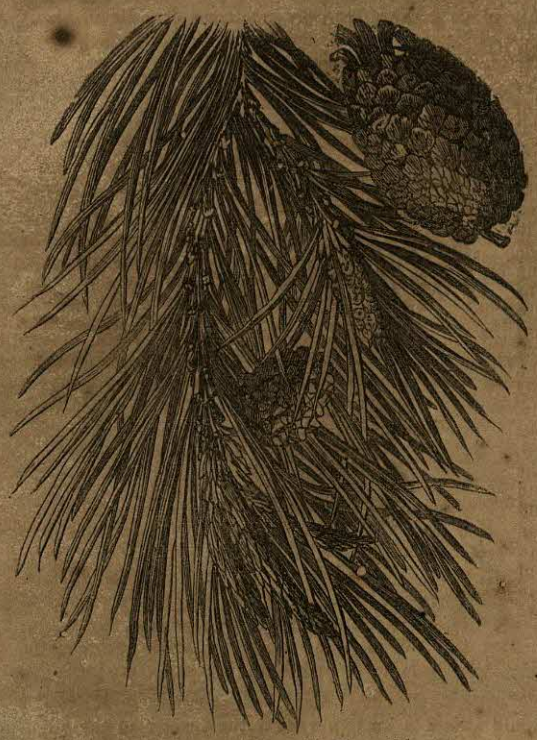


Fig. 110.—*Leaves and Cone of the Pinus Sylvestris.*

filling the valleys, and rising on the hills, even at the height of 2,500 feet above sea-level, among the northern Grampians, especially in the districts of Braemar, Glenmore, and Rothiemurcus. This species often exhibits individual specimens of immense size and beauty. From a tree that was felled in Glenmore, a plank was cut five and a-half feet broad, free from every kind of imperfection. At half the preceding height above sea-level, the Scotch fir, in its own country, becomes stunted and of little value. Mr. Loudon mentions some specimens whose size was no doubt due to their being planted in more favourable situations; but the diameter of their trunks did not exceed that of the tree above mentioned, although they rose to the altitude of sixty, seventy-five, eighty, and 100 feet. The wood of this tree constitutes the red or yellow deal, which is reckoned the most durable of all the fir-tribe. The most common species of tree which covers the northern part of Russia with immense tracts of forest, is the pine, where it grows to an enormous height and bulk; but the *Pinus Sylvestris* is by far the most abundant; and, retaining its foliage during winter, it gives shelter to man and beast, and greatly enlivens the dreariness of these bleak regions. The greater the intensity of the cold, the firmer and more dense does its timber become. This tree furnishes the peasantry there with materials for constructing their cottages, boats, fences for enclosure, and with fuel. From the ashes of this tree are principally obtained the potashes of Russia; and by a very rude method of distillation, the peasantry obtain an abundant supply of turpentine from its roots. The trunk of the tree which grows vertically, or perpendicular to the ground, and is covered with a thick, rough bark, is shown in fig. 105. Its head is conical or rounded, and is narrow in proportion to its height: a section of it is seen in fig. 109. The needle-like form of the small leaves of this tree is exhibited on a large scale in fig. 110, which shows a small branch with the cone and bloom attached to it.

The *Pinus Abies*, or Spruce-Fir, of which there are two kinds, the white fir, and the red fir, is found in the North of Europe and Asia. These trees generally grow best at a height of from 300 feet to 500 feet above sea-level, and require about

Fig. 111.—*Cones of the Pinus Abies.*

Fig. 106.—*Trunk of the Pinus Abies.*

Fig. 112.—*Cone of the White Fir.*

a century to attain their full size. Their length varies from about 100 to 180 feet above the ground, and their average age, before final decay, is about 400 years. The diameter of their trunk does not exceed that of the Scotch fir. Their cones are about six inches long, and of a cylindrical form, rounded at the ends; that of the white fir is closely covered with flat, prickly scales, and that of the red fir with flat, blunt scales, as seen in figs. 112 and 111. The red fir abounds in the north of Germany, growing singly in mountainous districts, as well as in large forests. It has a conical shape at top, and its leaves are of a dark-green colour, four-cornered, and prickly. Its bark is of a reddish-brown colour; and in old trees, it becomes cracked and scaly, as shown in fig. 106, which exhibits the trunk, as already mentioned. In fig 113 is shown the leaves of the white fir, which are broader and thicker than the other species, and are arranged round the spikes in single and double rows. Forests of spruce-fir cover whole ranges of mountains of diminished altitude in Lapland, and the sides of other ranges of a higher elevation.

Fig. 113.—*Leaves of the White Fir.*

LESSONS IN BOOKKEEPING.—No. I.

INTRODUCTION.

BOOKKEEPING, as the word implies by its compound origin, signifies the art of keeping a set of merchant's books or a set of tradesman's books in such a manner as to show, at any time that may be required, the debts owing to the merchant or the tradesman; the debts which either owes; the property which either possesses; and the amount of the gains or losses which either has made or experienced in business. More concisely, Commercial Bookkeeping may be defined as the art of arranging the entries of mercantile transactions, in books adapted for the purpose, in such a systematic and orderly way, that a merchant may, at any period of the year, ascertain the *actual worth* of a trading concern.

A correct statement, in business form, of any mercantile transaction written in the proper book, or transferred from one book to another, is called an *Entry*, because it is then said to be inserted or *Entered*.

The book into which the entries of all the transactions of any trading concern are ultimately *collected* in a proper but abridged form, for the purpose of ascertaining its actual worth at any period of the year, is called the *Ledger*, from the verb *lego* in Greek or Latin, (German, *leggen*), *to lay, gather*, or *collect*.

When the entries of transactions in business are made only *once* in the Ledger, the books are said to be kept by *Single Entry*; when they are made *twice* in the Ledger, the books are said to be kept by *Double Entry*. Let us illustrate this by an example: suppose a merchant, on the 12th of January, sells goods of the value of £50, to a tradesman whose name is Thomas Simpson; there would be, in the Ledger kept by *Single Entry*, only one entry of this transaction, to the following effect:—

THOMAS SIMPSON Dr.

Jan. 12. To Goods..... £50 0 0

This Entry, however, would have previously appeared in a book called the Journal or Day-book; and it is brought into the Ledger as its final resting-place. Now, in the Ledger kept by *Double Entry*, the same entry would be made *twice* in the Ledger, but in very different forms. It would appear FIRST in the Ledger, *exactly* as it does in the *preceding instance*; but it would appear a SECOND TIME in the Ledger in the following form:—

GOODS ACCOUNT Cr.

Jan. 12. By Thomas Simpson..... £50 0 0

Here, we must inform some of our students, that *Dr.* means *Debtor*, and *Cr.* means *Creditor*. The reason why these words are used in the preceding entries is plain: when a tradesman buys goods on *Credit*, he becomes a *Debtor to* the merchant of whom he bought them; and when a merchant sells goods on *Credit*, he becomes a *Creditor by* the tradesman to whom he sold them.

In the second entry of the preceding transaction in the Ledger, which is peculiar to the system of Double Entry, there is an elegant fiction adopted, viz., that of making the GOODS the *Creditor* instead of the MERCHANT; thus, a merchant's name is never entered in his own books, either as *Debtor* or *Creditor*. For, when he buys goods on credit, he makes the *Goods Account* appear as the *Debtor to* the *Person* of whom he buys them; and he makes the *person* of whom he buys them appear as the *Creditor by* the *Goods Account*. In like manner, when he sells goods on credit, he makes the *person* to whom he sells them appear as the *Debtor to* the *Goods Account*; and he makes the *Goods Account* appear as the *Creditor by* the person to whom he sells them.

In keeping books by *Single Entry*, this fiction cannot be adopted; for the Ledger, in this system, contains only *Personal Accounts*, that is, the accounts in the names of the *persons* with whom the merchant transacts business. In the books of many persons who use Single Entry, such as tradesmen, shopkeepers, &c., the names of those persons only who are *Debtors* in the business are entered in the Ledger, and the names of those who are *Creditors* are left out, on the supposition that there is no need to keep the *Creditors'* accounts, seeing that they will be sure to take care of their own affairs. But this system cannot be called *Bookkeeping*, according to our definition, because it is utterly impossible, from the state of the Ledger, to arrive at a knowledge of the tradesman's affairs. Such a system, at best, can only be called *Semi-bookkeeping*. In the case of those who employ *Single Entry*, and who keep *Personal Accounts* both of *Debtors* and *Creditors*, there is of course a better view of the actual state of business kept in the Ledger; but still there is no proper record kept of many transactions connected with the

purchase and sale of goods, such as the gain or loss made by these transactions; their settlement by cash or bills; the discount or interest allowed on some transactions; the charges and expenses of the business; and various other items of very considerable importance in the management of a tradesman's affairs. While treating of this difference between *Single and Double Entry*, we cannot but cite the opinion of a very good authority, George Jackson, Accountant:—"The system of bookkeeping by *Double Entry* is one of consummate beauty; every debit amount having its corresponding credit; and every *Dead** account exhibiting either profit, loss, or stock in hand. *Personal Accounts*; these are *Debited* (made *Debtor*) to goods, cash, charges, commission, and for everything we *give out*; and *Credited* for what *we receive* in goods, cash, charges, &c. *Single Entry* (according to the common method of keeping books by Single Entry) has effected the ruin of thousands; simply from the neglect of duly collecting the various *charges* that appear upon the face of the *Personal Accounts*. As cancerous sores corrode and ultimately destroy the vitals, so do these imperceptibly eat up the profit of a man's business. By *Single Entry*, your 'accounts current' are perhaps examined into most scrupulously; and upon being found correct, 'Charges' and 'Interest' are suffered to '*run off*,' unnoticed in the Ledger, but are never collected together into one account; and whether your CHARGES upon Personal Accounts amount to £50 or £500 per annum, seems to be a matter of total indifference; all you seek, in order to ascertain the state of your affairs, are your balances, Dr. and Cr., with the stock of goods and cash on hand; and, should you have omitted any amount in the posting [carrying the entries from the Journal or Day-book into the Ledger], you possess not the slightest means of discovering such an omission, unless you happen to recollect the transaction, or that you fall into the hands of an HONEST MAN, who informs you of it."

In every mercantile house of business there ought to be at least four books kept for the purpose of properly recording the entries of the mercantile transactions of the concern; these are the Day-book, the Cash-book, the Bill-book, and the Ledger. If the books be kept on the principles of Single Entry, these four books are, in general, sufficient to effect the common purposes of Bookkeeping; but with these only, the merchant can seldom or ever ascertain the state of his affairs without constant reference to the value and quantity of goods actually in his possession. In such cases, if the business be very extensive, it is necessary to keep a Stock or Warehouse-book, an Invoice-book, a Sales-book, and various other books, which take their names from the nature of the business pursued, or from the particular kind of goods of which it is necessary to keep an account. If the books be kept on the principles of Double Entry, then an important book, not yet mentioned, becomes an indispensable requisite; this book is called the *Journal*, and this name, as its origin implies (being derived from the French, jour, *a day*), has exactly the same meaning as *Day-book*. The use of a Journal, however, is very different from that of a Day-book, or, as it is sometimes called, a *Waste-book*. The Journal, in Double Entry, is the assistant and companion of the Ledger; into it are collected all the entries of the different transactions of the business, however numerous they may be; and in it they are methodically arranged for the purpose of being *posted* (entered) into the Ledger. The entries in the Journal are, of course, collected from all the different books kept in the concern, commonly called the Subsidiary Books, whether they be few or many, in order that, by this means, every transaction may appear and have its proper place in the Ledger. According to the old *Italian method* of bookkeeping, so called because it was first practised in the mercantile states of Italy, every transaction in business, whether of purchase or sales, whether of cash or bills, whether of interest or discount, whether of barter or exchange, whether of gain or loss,—all was entered first in the *Waste-book*, as a sort of original *Memorandum-book*, without order or system; from this book, the entries were then taken, and classified and arranged in the Journal from time to time, as the bookkeeper could find opportunity; the same entries were again taken from the Journal and posted into the Ledger, that is, they were then finally arranged and collected under the different heads of Dr. and Cr. to which they properly belonged, so that all the transactions with each customer, tradesman, merchant, or other individual, were distinctly and clearly seen at one view.

It is to the *Italians*, therefore, that we originally owe the system of keeping books by *Double Entry*; and it is to them that we owe the elegant fiction of personifying Cash, Stock, Goods, Bills, Merchandise, Adventures, Profit and Loss, &c., so as to give them "a local habitation and a name" in the Ledger; thus making them a counterpart to the real persons with whom a merchant transacts business; and thus dividing his Assets and Liabilities under distinct heads, so that a proper account can be kept of each without confusion, and his real or actual worth periodically ascertained. The Italian method looks very simple and beautiful at first sight; and it would seem to be preferable to our multifarious modern improvements in Bookkeeping, by which separate books and accounts are multiplied, and the labour of keeping them apparently increased; but this is not the case, it being found that subdivision and distinct separation in books and accounts lead to accuracy, punctuality, and readiness; and afford the best means of avoiding error, of checking errors when they occur, and of not only ascertaining at once the particular position of any department of a merchant's business, but of speedily ascertaining the condition of the whole concern. The modern system of Bookkeeping by Double Entry, therefore, as it now exists in its present state of perfection in the first mercantile houses, is but an exemplification of the admirable principle of the *division of labour*; a principle which has raised the arts and manufactures of this country to their present pitch of excellence and grandeur.

With respect to the books called *Subsidiary* (from the Latin, subsidium, *help* or *assistance*), they of course form the subsidies or basis upon which the superstructure of the Ledger is raised; and many of their names sufficiently indicate their nature and the purposes for which they are employed; thus we need scarcely tell our readers, that the *Cash-book* is used for the entries of all moneys received or paid, whether it be in coin of the realm, in notes of the Bank of England, or of any other bank or in checks upon a merchant's banker; and that the Bill-book is used for the entries of the particulars of all bills *drawn* or *accepted* by the merchant himself, or transferred to him or by him, in lieu of cash to be received or paid. The names of *Day-book* and *Journal*, however, instead of indicating the nature or use of these books, merely indicate *the time* of making the transactions; but these names which, as we have seen from their origin, were once synonymous, have in respect to modern improvements in Bookkeeping lost their original meaning, it is plain that other names more expressive of the real use of these books must necessarily fall to be adopted. The name *Goods-book* is a more appropriate term than that of *Day-book*, which is still applied by some to the book in which the daily record of purchases and sales of goods is entered: but it is not sufficiently general for those who enter accounts of other transactions, exclusive of those belonging to cash and bills. If a merchant wishes to keep separate books for his purchases and sales, he has only to keep two books, which will indicate by their titles the object thus intended; these titles may either be Purchase-book and Sales-book, or Goods-bought-book and Goods-sold-book. As goods when bought by and sent to a merchant are always, or ought to be, accompanied with an invoice or account stating their quantity and price, the Goods-bought-book might be called the Invoice-book, and the entries in this book might contain the exact particulars of quantity and price, made out in a form prepared for journalizing or posting, without being a mere copy of the invoices. The invoices themselves are generally preserved, as important documents, by being pasted into a book made of coloured paper. The Sales-book, or as it might be called the Outward Invoice-book, might in like manner contain the exact particulars of quantity and price relating to goods sold, and prepared for journalizing or posting, without being a mere copy of the invoices sent out with them; for, as a merchant receives invoices with goods bought, so he must give invoices with goods sold. The former book might then be called the Inward Invoice-book, to distinguish it from the latter.

As to the *Journal* kept by modern *Double Entry*, it has no longer any right to this title; it is used, as has been observed, as a companion and assistant to the Ledger, and therefore might be appropriately denominated the *Sub-Ledger*; but if a name were given to it which indicated the period that elapsed

* *Dead* is another name for *fictitious* or *nominal* accounts; such as Goods Account, Cash Account, &c.

before making it up from the Subsidiary books, then it might be called Week-book, Fortnight-book or Month-book, according as time was found or appointed to make it up; but Day-book or Journal, in their original sense, it could not and ought not to be called. The verb to *journalize*, that is, to transfer entries from *the Journal* into the Ledger, would require to be changed accordingly; unless we chose to retain the term *posting*, when the application of *sub* to it would be necessary. For, as *posting* means *transferring entries from the Journal into the Ledger*, so, *sub-posting* would mean *transferring entries from the subsidiary books* into the *Journal* or *Sub-Ledger*.

The Ledger, as before observed, is by far the most important book in a merchant's business, or indeed in any tradesman's business whatever. It contains, or ought to contain, an account of every transaction affecting business in any way whatever; it ought to be so lucidly and clearly kept, that if brought into a court of law by any unforeseen accident, the judge, the commissioners of bankruptcy, or any other legal authority, would pronounce it a pattern for imitation, and compliment the owner of it on the occasion. It arranges every transaction in business under its proper head or account to which it belongs; and it ought to be so kept that from this book alone, at any given period, the state of accounts between a merchant and any one with whom he transacts business can be ascertained. Finally, it ought to be so kept that at a given period, and with very little trouble, the state of a merchant's general affairs may be determined, and the important fact ascertained whether he is gaining or losing by his business. If a Ledger does not do this, it does nothing; at least, nothing to [illegible] the bookkeeper, whoever he is, may [illegible] To conclude, on this part of [illegible] emphatically than before [illegible] Bookkeeping by *Double* [illegible], that the *Journal, as now used* in a merchant's business, *Double Entry*, contains all the transactions of collectively, and for [illegible] arranged in the order of time only, but will depend on that [illegible] a given period; hence its proper name be called the *Sub-Ledger* [illegible] period; or else, it may very appropriately *par excellence* so [illegible] *Ledger* or *Time-Ledger*; whereas, the Ledger, being open to in [illegible] called, might be called the *Public-Ledger*, as period. [illegible] spection by proper authorities, at any given

LESSONS IN ENGLISH.—No. LII.

By John R. Beard, D.D.

Now [illegible] *Long*, [illegible] in "Con[illegible] observe how these degrees of comparison are indicated. [illegible] the positive becomes long-*er* in the comparative, and long-*est* the superlative. You thus see that the addition of *er* to the positive forms the comparative; and the addition of *est* to the positive forms the superlative.

While, however, we say long, long*er*, long*est*, we do not say eventful, eventful*er*, eventful*est*; but instead, we say eventful, *more* eventful, *most* eventful. Accordingly, we have a second way of describing the degrees of comparison, namely, by prefixing to the positive the adverbs *more* and *most*. Respecting the employment of these two methods the following rules may be given.

Monosyllables take at the end *er* to form the comparative, and *est*, to form the superlative; or, when the word ends in a vowel, *r* and *st*, to form the comparative and superlative; e. g.

Positive.	*Comparative.*	*Superlative.*
Wise	wise*r*	wise*st*
Great	greate*r*	greate*st*
Rich	riche*r*	riche*st*

Monosyllables and dissyllables ending in *y* change the *y* into *i* before they are inflected, e. g.

Positive.	*Comparative.*	*Superlative.*
Sly	sli*er*	sli*est*
Lovely	lovelie*r*	loveliest
Happy	happie*r*	happiest

Dissyllables which terminate in *le* or *re*, take in the comparative *r*, and in the superlative *st*; e. g.

Positive.	*Comparative.*	*Superlative.*
Able	able*r*	able*st*
Noble	noble*r*	noble*st*
Sincere	sincere*r*	sincere*st*

Dissyllables of which the accent is on the last syllable, may have er and est; e. g.

Positive.	*Comparative.*	*Superlative.*
Discreet	discreete*r*	discreete*st*
Genteel	genteele*r*	genteele*st*
Robust	robuste*r*	robuste*st*

All these classes of words may, however, be compared by *more* and *most*, and with the last class the use of *more* and *most* seems preferable; e. g.

Positive.	*Comparative.*	*Superlative.*
Rich	*more* rich	*most* rich
Sly	*more* sly	*most* sly
Able	*more* able	*most* able
Discreet	*more* discreet	*most* discreet

Generally in words of more than one syllable, the employment of *more* and most is correct, if not obligatory; e. g.

Positive.	*Comparative.*	*Superlative.*
Careful	*more* careful	*most* careful
Candid	*more* candid	*most* candid
Learned	*more* learned	*most* learned
Careless	*more* careless	*most* careless
Charitable	*more* charitable	*most* charitable

Adjectives formed by the suffix *some* except handsome (handsom*er*, handsom*est*) require *more* and *most*; e. g.

Positive.	*Comparative.*	*Superlative.*
Fulsome	*more* fulsome	*most* fulsome
Blithesome	*more* blithesome	*most* blithesome

Exclusively by *more* and *most*, are formed the adjectives which have the ensuing terminations; e. g.

Ain	as	certa*in*	*Id*	as	cand*id*
Al	,,	mort*al*	*Ing*	,,	trifl*ing*
Ant	,,	dist*ant*	*Ive*	,,	mass*ive*
Ed	,,	wretch*ed*	*less*	,,	care*less*
Ent	,,	recent	*ous*	,,	poro*us*
Ful	,,	bliss*ful*	*ish*	,,	peev*ish*

If a word ends with a consonant preceded by a short vowel, the consonant is doubled before *er* and *est*; e. g.

Positive.	*Comparative.*	*Superlative.*
Big	bigger	biggest
Fat	fatter	fattest
Fit	fitter	fittest
Red	redder	reddest
Thin	thinner	thinnest

The following adjectives are usually given as irregular: namely,

Positive.	*Comparative.*	*Superlative.*
Bad	worse	worst
Far	farther	farthest
Good	better	best
Little	less or lesser	least
Much	more	most

Here some explanations are necessary. Worse properly is not the comparative of *bad*, but of an adjective in the positive condition which has long ceased to exist. So *bad* itself has no comparative and no superlative in the present state of the language. *Worst* is nearly a regular form from *worse*. The same remarks may be applied to *good*, *better*, *best*. The full form in each case is made up by the aid of two distinct words. *Better* is the comparative of the Anglo-Saxon *bet*, as *worse*, *worst* are from the Anglo-Saxon *wyrs*. These are instances not so much of irregular as defective comparisons. *Little*, *lest*, *least* seems to be abbreviated forms of *little*, *littler*, *littlest*; *littlest* became *least* and *least* gave rise to *less*. *Lesser*, a corruption of *less*, seems to have arisen from the general form of *er* as a comparative sign, combined with the disinclination to a monosyllabic adjective. *Most* is a contracted form of the regular superlative from *more*, as *more*, *morest*, *most*; and *more* itself is a regular though shortened form from *much*, in the Anglo-Saxon, *maenig*. *In far*, *farther*, *farthest* (Anglo-Saxon *feor*, *fyrre*, *fyrrest*) the *th*, as Latham remarks, seems euphonic, that is, inserted for the sake of ease in pronunciation. *Far* is now more common as an adverb than as an adjective.

The word *most* becomes a terminational suffix to denote the superlative degree in these words, namely *foremost*, *hindmost*, *inmost*, *lowermost*, *outermost*, *undermost*, *uppermost*. Here we have compound adjectives in the superlative, consisting, for instance, of the

superlative *most*, and the preposition *under*. Compare *under* with *outer* and *upper*. *Outer* is an adjective from *out*, as

"He brought me into the *outer* court." (Ezek. xlvi. 21.)

Outer (whence *utter*) has its counterpart in *inner*, thus *out*, *outer* (*utter*), *outmost* (*utmost*), *in*, *inner*, *inmost*. What then is the origin of the preposition *under*? May it not be *on* and *nether*, that is *on the lower side*; *on nether*=under; whence the superlative *undermost*. So *upper* is a comparative from the old positive *up*; *up*, *upper* (as in "upper leather" in a shoe compared with the sole or *under-leather*) *upmost*.

Most is often used without any direct reference to comparison, in order to denote a very high degree of the quality, e. g.

"Ere yet the salt of *most unrighteous* tears
Had left the flushing in her galled eyes."—*Shakspeare.*

The inflected superlative is used in a similar sense,

"Unbidden guests are often *welcomest*."—*Shakspeare.*

Adjectives compounded with a noun defining their signification, do not admit of comparison, e. g. *blood-warm*, *coal-black*, *milk-white*, *pea-green*, *sky-blue*.

Nor do those admit of comparison which signify the stuff or substance of which any thing is made, as *golden*, *silver*, *brazen*; nor those which denote the country to which persons belong, e. g. *British*, *Irish*, *French*.

Equally without comparison are all adjectives which indicate a fixed or definite idea, quality or quantity, as *square*, *triangular*, *round*, *circular*, *straight*, *upright*, *perpendicular*, *daily*, *annual*, *biennial*.

Moreover, adjectives which denote the highest state or condition of a quality or thing are without comparison. Thus, you cannot compare *boundless*; for if an object is boundless, it cannot be more or less boundless. Accordingly all words in *less* are incapable of comparison. So are such adjectives as *extreme*, *full*, *immense*, *infinite*, *perfect*, *principal*, *right*, *wrong*, *supreme*, *preferable*, *universal*. Sometimes, however, a latitude (not to be imitated) is taken in some of these words. Thus, "more perfect" is said when "less imperfect" is meant, or "more nearly approaching perfection." Equally incorrect is "more certain;" "less uncertain" is what is intended. Hooker has "unaptest" and Locke "more uncorrupted"—both, in strictness of speech, are wrong; for the prefix *un* is a negation, that is, it denies the quality, of course the whole quality, declared in the adjective. Yet Shakspeare says

"O good but *most unwise* patricians,"

and common usage follows his example. The truth is, that in adjectives compounded of a negative prefix, the thought of the derivation is lost, and in the use of them, a positive idea occupies the mind; thus *unwise* is regarded as the same as *foolish*.

Poetic licences are not to be imitated, especially in prose. Thus Milton's celebrated lines:—

"And in *the lowest* deep, a lower deep
Still threatening to devour me, opens wide,"

contain a licence which imagination may justify, but which grammar cannot excuse.

Numeral Adjectives.

One class of adjectives has connected with it the epithet "Numeral," because it contains the numbers. When we say "five persons," we obviously in *five* make use of an adjective, for the word *five* qualifies the word *persons*. Numeral adjectives are either cardinal or ordinal; *the cardinal*, one, two, three, four, &c. are those which form the series of our numbers, being called "cardinal," because they are *the chief*; thus prudence, justice, temperance and fortitude are called the cardinal virtues; that is, is leading or most important, the principal virtues, as being those on the exercise of which the existence of others depends. *The ordinal* (Latin ordo, *rank*, *order*), such as *the first*, *the second*, *the tenth*, are those which denote the place in a series which the numbers severally hold.

Our numbers are formed on a decimal system. Thus we have a series from one to ten, another from ten to twenty, and so on until you arrive at ten times ten, that is a hundred. Again ten hundreds make a thousand. Of very few independent words, however, is the series made up. From one to ten we find ten independent words, but another independent word does not occur until you come to a hundred, nor another until you come to a thousand, nor again another until you come to a million; for eleven signifies *one over ten*, twelve *two over ten*. In *thir*teen, *four*teen, and *fif*teen, any one may see that we have merely compounds, severally of three and ten, four and ten, five and ten; so *twenty* is twice ten, *thirty*, thrice ten, &c.

In using the terms *twice*, *thrice*, I have used units out of a seris which consists of what is called *Numeral Adverbs*. The numeral adverbs *once*, *twice*, *thrice*, denote the number of times a thing is to be taken; thus twice two (or *two two's*) make four. The list is very defective, for after thrice we say *four times*, *five times*, &c. as, *nine times nine* make eighty-one.

From the ordinal numbers *first*, *second*, *third*, &c. are formed by the addition of *ly*, so many adverbs, as *eighthly*, *ninthly*. Instead of these a periphrasis may be used, as *in the first place*, *in the sixth place*. These adverbs denote the sequence of topics or heads in a discourse or speech.

The *ordinals* stand either before or after their nouns. Thus we say "the third book," but speaking of a series of monarchs we place the adjective after the noun, e. g., *George the fourth*. We say the *first of January*, but we cannot, while our present queen is alive, speak of *Victoria the first*, because until there is a *Victoria the second*, we are not sure that any series has been begun. With days of the month we say either *the twelfth* (12th) *of May*, or *May the twelfth*; the former is the more usual in ordinary affairs.

There is yet another series of numeral adjectives, *the multiplicative*, as *single*, *double*, *treble*, *quadruple*, *quintuple*, *centuple*. These are immediately from the Latin. Another series of similar import are of Teutonic origin, namely, *twofold*, *threefold*, *fivefold*, &c.

The comparison hitherto made involving more than is implied in the positive may be called the comparison of superiority. But all comparison involves the idea of less as well as the idea of more. The comparison which involves the idea of less may be called the comparison of inferiority. For the comparison of inferiority there are no inflexional terminations; it is formed exclusively by *less* and *least*.

The Comparison of Inferiority.

Positive.	*Comparative.*	*Superlative.*
Rich	less rich	least rich
Sly	less sly	least sly
Able	less able	least able
Discreet	less discreet	least discreet
Careful	less careful	least careful
Big	less big	least big

These general rules are subject to modifications in the practice of good writers. For instance, the use of the inflexional comparison (er, est) or the comparison of prefix (more, most) is made in a measure dependent on the ear. We also occasionally meet with double comparatives and double superlatives;—but these are not to be imitated; examples:—

"The duke of Milan and his more braver daughter."—*Shakspeare.*

"Changed to a worser shape thou canst not be."—*Shakspeare.*

"After the most straitest sect of our religion."—*Paul.*

Some adjectives in their nature do not admit of comparison. Such are those which end in *ish*, a termination like *some*, which denotes a portion, *ish* denoting a small portion; e. g. *It is cold*; yes, *it is coldish*; that is, *rather*, or *somewhat cold*.

Exercises for Parsing.

"Scepticism, which is commonly laid to the charge of intellectual philosophy, may, in the first place, be fairly said to have done its worst. Bishop Berkeley destroyed this world in one volume octavo; and nothing remained after his time, but mind; which experienced a similar fate from the hands of Mr. Hume in 1737;—so that, with all the tendency to destroy, there remains nothing left for destruction: but I would fain ask if there be any one from the days of Protagoras the Abderite to this present hour, who was even for a single instant a convert to these subtle and ingenious follies? Is there any one out of Bedlam who *doubts* of the existence of matter? who doubts of his own personal identity? or of his consciousness? or of the general credibility of memory? Men *talk* on such subjects from ostentation, or because such wiredrawn speculations are an agreeable exercise to them; but they are perpetually recalled by the necessary business and the inevitable feelings of life to sound and sober opinions upon these subjects."—*Sydney Smith.*

LESSONS IN LATIN.—No. LVII.

By John R. Beard, D.D.

CONJUNCTIONS AND VERBS.

Conjunctions are words which unite other words together. This is the meaning of the term conjunction (con and jungo), if we are guided by its etymology. A wider signification is required by the service which conjunctions render. Led by their application, we may define conjunctions as words which mark the relations in which sentences and clauses of sentences (or abbreviated sentences) stand to each other. How numerous those relations are may be learnt from these

CLASSES OF CONJUNCTIONS.

1. *Copulative*, or such as are used in combinations; et, *and*, que, *and*; que is called an enclitic, that is, it is subjoined to the word it qualifies, and throws its accent on the word; e. g., hominum deorumque, *of men and gods*; etiam, *also*; quoque (enclitic) *also*; neque, nec, *neither*, and *not*; et—et, *both*; neque—neque, *neither—nor*.
2. *Adversative*, or such as denote opposition, at, *but* (ast, poetical); tamen, *yet*; verum, *truly*; vero, *in reality*; attămen (at and tamen), verumtămen, *but yet*; enimvēro, verum enimvēro, *but indeed*; sed, *but*; autem, *but*; atqui, *but yet*.
3. *Disjunctive*, or such as denote separation; aut, vel, ve (enclitic), *or*; aut—aut, *either, or*; vel—vel, ve—ve, *either—or*.
4. *Causal*, or such as assign a reason; nam, namque, enim, etenim (et and enim), *for*; quum (from qui), *since*; quod (from qui), *because*; quoniam (quum and jam), *since*; quandoquidem, seeing *that*; tanquam (tam and quam), *as, as if*.
5. *Conclusive*, or such as indicate a conclusion or inference; eo, ideo (id and eo), idcirco (id and circa), propterea (propter and ea), *on that account*; ergo (Greek, ergon, *work, deed*), igitur, *therefore*; proinde, *accordingly*; quocirca, quamobrem, *wherefore*.
6. *Local*, or such as indicate place; ubi, *where*; unde, *whence*; quo, *whither*; qua, *by what road*; quatenus, *how far*.
7. *Temporal*, or such as signify time; dum, *whilst*; donec, *until*; quoad (quod and ad), *up to the time when*; quum, *when*; priusquam, antequam, anteăquam, *before*; postquam, posteăquam, *after*; simulac (simul and ac), simulatque, simul, *as soon as*; ut, *as*; utprimum, *as soon as*: ubi, *where, since*; quoties, *as often as*.
8. *Comparative*, or such as imply a comparison; ut (uti), sicut, velut, ceu, *like, just as*; quomodo, quemadmŏdum, *in which manner, that, as*; quippe, *for, since*.
9. *Conditional*, or such as express a condition or stipulation; si, *if*; nisi (ne and si), *unless*; sin (si and ne, *but if*; si mŏdo, *if only*; dummŏdo, modo, *provided that*; dummodo ne, modo ne, *if only not*; sive (seu), *or if*; sive—sive, *whether that or*.
10. *Concessive*, or such as denote a concession or admission; etsi (et and si), *although*; etiamsi, *even if*; tametsi (*but if*) quamquam, *although*; quamvis, quamlibet, quantumvis, *however*; licet, *if indeed*; ut, *suppose that*.
11. *Final*, or such as assign the end, object, or result; ut, *in order that*; ne, *in order that not*; nevo (neu), *and in order that not, nor*; quin, *that not, but*; quo, *wherewith*; quomĭnus, *wherewith not*.

It is not possible to assign to these and other particles, meanings which shall be applicable in all cases. The meanings actually given must be modified by experience. The subject is one of special difficulty, and can be mastered only by long and careful study.

Some of these classes of conjunctions qualify rather than govern verbs; such are the copulative, the adversative, the disjunctive, the conclusive, &c. It is chiefly the causal, the conditional, the concessive, and the final, that exert on verbs the peculiar influence which we have termed government; they have, that is to say, a direct action, and as a direct action, so a direct influence on verbs, producing in them a change of mood. The following sentence presents an instance of a qualifying conjunction, and an instance of a governing conjunction.

Legum *idcirco* omnes servi sumus, ut *liberi* esse possimus.
We are all slaves to the laws, on that account that we may be free.

Idcirco qualifies the first member of the sentence and ut, *that*, or *in order that*, governs the verb of the second, putting it into the subjunctive mood.

The subjunctive is for the most part the mood which governing conjunctions require; but quod, for instance, may stand with the indicative; e. g.,

Quanta est benignitas naturae *quod* tam multa ad vescendum gignit,
How great is the kindness of nature that she produces so many things to eat.

The indicative is employed generally when the second member is explanatory of the first, and the quod is little more than a connecting particle.

Having given these general explanations, I shall take up each of the conjunctions severally, the rather, because, as I have intimated, they require careful study. The copulative conjunctions et, que, ac, atque, *and*; et, etiam, quoque, *also*; and in negative propositions, neque, nec, are employed as follows.

Et unites words and groups of words when each is regarded as independent and of equal weight; e. g.,

Reges excellentissimi fuerunt Persarum Cyrus *et* Darius.
Cyrus and Darius were very excellent kings of the Persians.

The enclitic que is used when the second word is an appendage to the former, and goes with it to form a whole; e. g.,

Senatus Populus*que* Romanus decrevit,
The Roman senate and people determined.

Contrasted words expressive of a whole are combined by que; e. g., terrâ marique.

Atque (that is, ad and que) is an emphatic particle of connexion, equivalent to our *and*, when the stress of the voice is thrown thereon; e. g.

Interim omnes, servi *atque* liberi opus faciebant.
Meanwhile all free men no less than slaves, performed the work.

Atque is abbreviated into ac, and has the same import.

These distinctions are not always rigidly observed, and the use of the one particle or the other depends on the view predominant in the writer's mind; as may be learnt from the following sentences from Cicero:

Et, que and atque used indifferently.

Rerum est divinarum *et* humanarum scientia;
Divinarum humanarum*que* rerum nomina aperuisti;
Omnium rerum, divinarum *atque* humanarum vim nosse.

In a succession of nouns, the et, instead of being reserved to precede the last, is repeated before each; as,

Vi vim illatam repellere *et* ratio doctis, *et* necessitas barbaris, *et* mos gentibus, *et* feris natura ipsa praescripsit.

To repel force by force, reason has enjoined on the learned, necessity on barbarians, custom on nations, and nature itself on wild animals.

Two negative propositions are connected by neque—neque, or in the abbreviated form nec—nec; as,

Illud neque taceri ullo modo, neque dici pro dignitate potest.

That cannot in any way be kept in silence nor spoken as a regard to dignity requires.

Neque (nec)—et and et—neque are found.

Etiam (et and jam) is used to add a member of equal weight to what has gone before, especially when the new member is unexpected, or rises in importance; as,

Caesar splendidam quandam rationem dicendi tenet, voce, motu, formâ *etiam* magnifica et generosâ.

Caesar has a splendid style of speaking, in voice, in gesture and even in lofty and magnificent beauty.

Quoque is que with an emphasis, and serves to give prominence and force to the word or words to which it is appended. Hence the exclamation of tu quoque (what, thou too?) with which Caesar received the blow from the dagger of Brutus.

Etiam and quoque serve not so much for connecting particles as to give point and effect to certain ideas. Quoque always stands after its word, etiam generally before its word.

As the copulative conjunctions unite two or more parts into

a whole, so the adversative divide a whole into its parts, and place those parts in opposition one to another. Three degrees of opposition may be distinguished; 1°. When one member is simply opposed to another; 2°. When one member restricts another, so that the latter no longer exists in all its fulness; and 3°. When the second removes the first, and substitutes something else. According to these distinctions, the adversative particles vary in meaning.

Autem properly signifies *again, on the other hand*, adding something rather varying from than opposed to what has preceded.

Sed, connected with se in seorsim and secedo, and so denoting separation, signifies *but*, in such a way as to mark a limitation or substitution.

At (from the obsolete form ast) introduces an opposed or contrasted thought in a sudden and lively manner. At is employed with objections, exculpations, warnings, and admonitions; as well as with wishes and prayers.

Atqui opposes and strengthens, and is used to affirm something incapable of denial or doubt.

Verum and vero, adverbial forms from verus, declare a statement as true; admitting in general what precedes, they limit it, and add that which any way is true.

Tamen marks the following thought as something which, from what has gone before, is unexpected, and which apparently contradicts it.

The adversative particles sed and verum appear in a second member correlatively to non modo, non solum, non tantum standing in the first; with the general meaning of not only—but or but also; thus non modo—sed or sed etiam.

The disjunctive particles regard the several sentences or clauses not as parts of a whole, but as separate elements of which the presence of the one excludes more or less decidly the presence of the other. This relation may exist on one side or on both. The exclusion is entire when it exists on both sides, partial when it exist on one side.

Aut—aut denote ideas or facts which are mutually and necessarily exclusive. The exclusion, however, may be in the mind of the speaker who considers the parts disjoinedly and severally.

Vel—vel denote an exclusion which does not lie in the nature of things, so that though the parts exclude each other, they may be united, or exclude each other for the sake of distinction. Instead of vel—vel we find the abbreviated form ve—ve.

Sive or seu, made up of si and ve, is often used as equivalent to vel si, and put one of two cases in either of which the proposition is true. Sive—sive put an alternative like our whether—whether, whether—or. Sive indicates a doubt or an alternative as to a name; as, sive Paris, sive Alexander, "whether you call him Paris or Alexander."

Causal conjunctions express either a cause, reason, or conclusion. Nam gives the explanation of the clause by which it is preceded; enim assigns the ground on which you may learn the truth of what is said. A regard to euphony, however, often determines which of the two shall be used, rather than any clear and marked distinction in their meanings. Nam precedes, enim succeeds; enim generally stands next after the first word. Nam unites with que to form namque, and enim with et prefixed makes etenim; the compounds in import scarcely deviate from nam and enim, and may both be post positive, or take their place after the first word in a sentence.

While nam and enim assign a cause or reason, itaque, igitur, ergo, proinde, ideo, and idcirco denote a conclusion. Itaque, *and thus*, shows that the fact which it introduces has its ground in what precedes. Igitur shows that a thought or a judgment is occasioned by what has been said before.

Proinde, *accordingly*, is in import similar to igitur, but is used only for exhortation and encouragement by the best Latin authorities.

Ergo, *in virtue of the fact*, in consequence, represents the thought, judgment or inference as a necessary result of what has been advanced.

Ideo, idcirco, *wherefore, on that account*, give what has been said as the ground or reason of what follows. The same relation is indicated by eam ob causam, quam ob rem (quam obrem) quare (quare) quapropter, and quocirca.

Exercises—Latin-English.

Ea vis omnia blandimenta voluptatis otique vicit; terrâ marique turbatum est; Numa ea pietate omnium pectora imbuerat ut fides ac jusjurandum civitatem regerent; vi vim illatam repellere et ratio doctis, et necessitas barbaris, et mos gentibus, et feris natura ipsa praescripsit; omnium rerum seminator et sator et parens, ut ita dicam, atque educator et altor est mundus; Hortensius erat memor et quae essent dicta contra, quaeque ipse dixisset; illud neque taceri, neque dici pro dignitate potest; animal nullum inveniri potest quod neque unquam natum sit et semper sit futurum; ergo et promissa non facienda nonnunquam, neque semper deposita reddenda sunt; Cæsar splendidam quandam rationem dicendi tenet, voce, motu, formâ etiam magnificâ et generosâ; auctoritate tuâ nobis opus est, et consilio, et etiam gratiâ; quod si jus, etiam justitia; optimus quisque confitetur multa se ignorare et multa sibi etiam atque etiam esse dicenda; otii fructus est non contentio animi sed relaxatio; non ab alienis, at a suis; sum consecutus non modo ut domus tua tota sed ut cuncta civitas me tibi amicissimum esse cognosceret; persuasum mihi est, nihil hominem nisi quod honestum sit, aut admirari, aut optare, aut expetere oportere; nihil est tam naturae aptum ad res vel secundas, vel adversas quam amicitia; homines nobiles seu recte seu perperam faciunt, in utroque excellunt; Cretum leges quas sive Jupiter, sive Minos sanxit, laboribus erudiunt juventutem.

English-Latin.

They do not labour, therefore they will have nothing when they (shall) have need; that which you say scarcely appears credible, but so it is; again and again Cicero invoked all the gods; no animal except man can be found which is endowed with reason; that is both good and bad, this neither good nor bad; the city decreed a statue to the father and the son, also to the daughter was a reward given; we must not only procure but enjoy riches; either learn or depart; the things which you say are either true or false.

PHYSICAL EDUCATION.—No I.

Gymnastics, or the art by which physical education is effected, is a Greek word, and literally signifies *stripped of clothing encumbrances*. This art consists in developing the strength and agility of the human body by exercise; and as this could best be done by putting off all the superfluous parts of the dress, we thus see the origin of the word *Gymnastic*. Physical education, therefore, consists in causing the body to undergo certain properly regulated exercises, and in bringing into full play all its powers of action, thereby enabling it to perform at pleasure, and with ease, all the principal functions of its organization, both external and internal. Writers on the subject have divided this art into three distinct branches, viz. Hygienic Gymnastics, Military Gymnastics, and Medical Gymnastics. *Hygiene* and *hygienic* are terms which we have lately borrowed from the French; they simply signify that which relates to the *health of the body*, and come originally from the Greek word *hygieinos, healthy; hygiene*, therefore, signifies the *art of preserving the health*, and *hygienic* anything which belongs to this art. We have had a word in use in our language, appropriated by the poets, and taken directly from the Greek, namely, *Hygeia* (properly *Hygieia*), which is the source of the term *Hygiene*; it simply signifies *health*, but it is used by the poets metaphorically, for the name of the imaginary *goddess of health*. Here, however, we protest against the abuse of the terms *Hygeia* and *Hygeianic* by our modern quack doctors, as if these terms employed in their advertisements of gamboge pills, and in their puffs concerning their so-called colleges of health, were intended only to conceal the object they have in view.

Hygienic Gymnastics, then, is the art of giving to the organization of the human body all the compass and elasticity of which it is susceptiple. *Military Gymnastics*, is also hygienic; but in addition to its object in developing and strengthening the organization, it has specially in view those exercises which are only adapted to the life of a soldier. *Medical Gymnastics*, which may be called *Therapeutics*, or *the art of curing disease*, is distinguished from the other two, as much by its object as by the circumstances under which it is employed. In this case, the body cannot be put under the same rules and exercises as when it is in perfect or even comparative health; gymnastics is here employed either to cure a disease, or to remedy a malformation; in the latter case, gymnastics trenches upon *orthopedy*, or *the art of curing deformities*.

Medical Gymnastics is not a modern discovery; it ascends to the age of Chiron, the rough preceptor of Achilles, whose physical education was so vigorous. After Chiron, Esculapius flourished, who was for his skill deified by the Greeks; he prescribed to his sick patients, riding and exercise in complete armour. Herodicus, who was censured by Hippocrates, caused his feverish patients at Athens to travel to Eleusis, going through Megara, a distance of about twelve leagues, without stopping to take rest or refreshment by the way. Galen, himself strongly addicted to the practice of gymnastics, seeing that he dislocated his arm at the age of thirty-five by fencing in the *palæstra* (the ancient *wrestling-school*), cured a man of great *obesity* (corpulence) by making him run every morning till he was bathed in perspiration. It was the gymnastic art which gave strength to the great Demosthenes, so feeble and sickly in his youth. It was the same art which made of a puny infant, which had been thrown without maternal pity from the Mount Taygetus, the illustrious general admired in all ages under the name of Agesilaus. An ancient physician affirmed that exercise would cure the vertigo. It is undeniable that gymnastics, in diverse diseases, especially in some affections of the nervous system, or in certain states of the constitution, will produce excellent results; and it is to be regretted that physicians deprive themselves of its advantages in curing their patients, by a species of unfortunate neglect. Scrofulous diseases, for instance, require much exercise in the open air, particularly in fine weather, a nourishing diet, and a strengthening regimen. The time is now come when, throwing aside foolish prejudices, gymnastics must form a part of all medical and hospital practice for the recovery of invalids.

The first system of gymnastics was empirical, violent, or, if you please, martial. Its object was to form soldiers robust, hardy, and able both in the management of weapons of war, and in close conflict in fighting.

Homer, it has been said, may be considered as the first *gymnasiarch*, or leader of gymnastic exercises; and of course this refers the origin of gymnastics to the tenth century before the Christian era. But Homer was, no more than Hippocrates, the inventor of what he has recorded; and the exercises which he describes unquestionably ascend to an age anterior to that in which he lived. We may just, for the sake of illustration, cite the Greek poet, and catch an idea of this primitive system of gymnastics. "The sons of Laertius," says he, "and of Thelamon, rush upon each other in the arena; they clasp each other with their powerful hands; their backs are strained by the force of their arms; they are drowned in perspiration; swellings start out on their flanks and their shoulders." These swellings of which Homer speaks are the startings, or projections, of the muscles increased by contraction. At this stage, however, of our lectures on Physical Education, we cannot resist the insertion of an old poem, being the supposed address of Chiron to Achilles, although it includes mental as well as physical exercises; it may be useful, as affording reflection to numerous readers, being put into plain didactic rhyme.

Old Chiron to his pupil thus began,
When he beheld him rip'ning into man:
Accomplish'd youth! well worthy of my pains,
You now are free, now guide yourself the reins;
Yet hear, Achilles, hear, before we part,
A few short precepts from a faithful heart.
What tho' the fates a lengthen'd age deny?
Let management a longer life supply;
And learn, at least, to live, before you die.
A little tract well tilled more profit yields,
Than realms of wide uncultivated fields.
'Tis not from length of years our pleasures flow,
Nor to the fates alone our bliss we owe;
Great ills, by art, we lighten or remove,
And skill our meanest pleasures may improve.
Think not, young prince, your elevated state,
Birth, honours, or the empty name of great,
Can fix your joys; peace in the hut is found,
While palaces with discord still resound.
Fortune to industry is always kind,
And tho' by vulgar notions painted blind,
Is still more equal than the vulgar know,
Who judge of happiness by outward show:
She smiles on all conditions; each may be
A man of pleasure in his own degree.

Yet few with art, their happiness pursue,
Tho' all mankind have always this in view,
And ev'ry sense seems made by nature's skill,
For giving pleasure and avoiding ill.
Nature, our common mother, has been kind,
And for a joyful race her sons designed,
But wholly blind, or doubtful how t' advance,
They leave the work of industry to chance.
Ev'n of those few who, with more active strife,
Pursue this great, this vital end of life,
Some, too impatient, know not how to wait,

Or aim at things beyond their human state.
Shun, then, Achilles, shun the faults of those,
Who still too little, or too much propose;
Stretch not your hopes too far, nor yet despair;
But, above all, of indolence beware.
Attend to what you do, or life will seem
But a mere vision or fantastic dream,
Spent in ideas of delight, at best,
While pleasure true is lost in doubtful rest.
In short, learn when and how to bear; in vain,
He pleasure seeks, who is afraid of pain.
But you, aspiring youth, by nature seem
Addicted to an opposite extreme;
Restless, impetuous, and soon inflamed,
And like a fiery courser hardly tamed,
In all things violent. Brave prince, disdain,
To let usurping angry passions reign,
In one rash moment sacrificing more
Than years of sad repentance may restore.

As Thracian winds the Euxine sea molest,
So wrath and envy, from a human breast
Drive Halcyon peace, and banish kindly rest.
For no security for joy is found,
But in a mind that's tractable and sound.
Suppress the first emotions of your ire,
And smother in its birth that kindling fire,
Ere anger yet possesses all your soul,
Ere yet your bosom heaves and eyeballs roll;
Think on the useful precepts I have taught,
And meet the rising heat with wholesome thought.
Or seek the sacred muses with your lyre,
Who with sweet peace to lonely shades retire;
Virtue and God, and godlike heroes, sing,
While hills and valleys with their praises ring;—
These learn to imitate, and him adore;
Thus sweetly to yourself, yourself restore;
Music, and verse, and solitude controul
Impetuous fury and compass the soul.

For this, I early taught you how to sing,
And formed your fingers to the trembling string:
For pleasure only wants the pow'r to show
The arts of consolation man should know;
Our joys are short and broken; and in vain,
To constant bliss would all mankind attain.
There is a Deity who rules our fate,
And damps all joys immoderately great;
That none on earth from sorrow should be free,
But ev'n our blessings taste of misery.
If fortune gives what rarely we obtain,
An equal share of pleasure and of pain,
Our portion is o'erpaid, the rest we find
But fond ideas of the wanton mind,
Which now vain scenes of godlike pleasure shows,
And then creates imaginary woes.

When sad, your ills examine and compare,
Judge of your own by what another's are;
Consider greater wretches, and the fates
Of mighty heroes, and of powerful states;
Thus evils will be seen in their own light,
And fancied ones will vanish out of sight.
Nor aim at pleasures difficult to gain,
Choose rather such as you can soon obtain.
Who scorns to trifle is by pride abused;
I pity him who ne'er can be amused,—
Who, slighting pleasures moderate and small,
Must live in rapture, or not live at all.
Great pleasures still are close allied to pain;
Who quits the peaceful shore and ploughs the main,
Huge waves and mighty tempests must sustain.

Let not the fond ambition to be blest,
The humbler pleasures in your power molest;
Still cherish hope, for without hope there's none;

Taste hope, but be not fed with that alone.
Some their whole lives in expectation spend,
As life were not begun, or ne'er would end;
Fondly from day to day themselves deceive,
Not living, but intending still to live;
While they neglect the joys they might possess,
For empty dreams of future happiness.
Let nature in your pleasures be your guide,
Nor suffer art her genuine charms to hide;
Her beauties with unwearied charms we see;
The truth of beauty is simplicity.

Live not by imitation, servile state!
Nor on the fashion, for your pleasures wait.
Man, otherwise so selfish and so proud,
Submits his taste to the fantastic crowd,
And lives not for himself: Do you pursue
Your own desires, and to yourself be true.
As bees extract their sweet from ev'ry flow'r,
So you, your joys from all things in your pow'r,
With industry and management produce:
The meanest trifles sometimes are of use.
Yet know well what you do, and when 'tis done,
Nor at all hours to ev'ry pleasure run;
But mix with art. your pleasures and your toils,
For pleasures have their seasons, and their foils.

Thus when the earliest dawn of eastern light
Proclaims the finish'd empire of the night,
Haste to the field, Achilles, nor disdain
To chase the foaming monster o'er the plain
Or, teach the fiery steed to feel the rein.
Now, let your car and arms your nerves prepare,
Or, for Olympic games, or future war;
And whether arts or glory fire your mind,
With thoughts more generous, or more refin'd,
The morning, to the muses, still is kind.
At noon, a simple short repast be made;
A shorter slumber in the cooling shade;
What's gay and light, th' unbended mind employs,
Or sports, or past delight, or future joys.
But when the evening star begins to rise,
When Phœbus' panting steeds forsake the skies,
Still cheerful, at the well-spread board be found,
Amidst bright friends, and with fresh garlands crowned;
While now the muses, with their song and lyre,
Banish old sorrows, and new joys inspire.

Thus when from toils of empire, you are free,
Nor camp nor council claim your liberty,
The morn, to labour and reflection give,
At noon, with temperance and quietness live;
The gifts of providence at ev'ning prove,
And spend the night in happiness and love.
Thus, thus, Pelides, drive your cares away,
Nor feel the evil, till the evil day.
One precept more, I fain would recommend,
And then, old Chiron's tedious lessons end.

Learn, gen'rous prince, what's little understood,
The godlike happiness of doing good.
How glorious to defend, and to bestow!
From nobler springs, can human pleasure flow?
A solid good, which nothing can destroy,
The best prerogative the great enjoy.
For this, remember, monarchs first were made,
For this, young prince, be lov'd and be obey'd.
At once yourself and mighty nations bless,
And make humanity your happiness.

In the fabulous and heroic age depicted by Homer, the art of gymnastics, which consisted chiefly in wrestling and boxing, was cruel and barbarous. It was only in later times, and in the celebrated city of Athens, that gymnastics assumed a scientific form, and was regularly taught in the Academy, in the Lyceum, and in the Cynosarges, gymnasia built outside the city, surrounded with gardens and sacred woods. In these were the young Greeks taught leaping, racing, throwing the disc and the javelin, and wrestling. To these were added pugilism and several other species of combat, particularly the *Pancratium*, which was a combination of boxing and wrestling. Several officers were appointed to the administration of each gymnasium. The *gymnasiarch* was the chief master or president, who had the general direction of the school; the *xystarch* was the president of the *xysti*, that is, the covered colonnades or porticos in which the scholars performed their exercises during winter or in bad weather; the *gymnastes* was he who selected the exercises according to the age and constitution of each scholar; and the *pedotribes* (*boy-trainer*) was the actual manipulator or teacher of the different exercises in each department.

Phonaskia, or *phonaey* (as the French term it), literally the art of exerting the voice, made a part of the gymnastics of the ancients. Modern gymnastics has introduced this useful art into military exercises, where its utility is undeniable. A troop of soldiers harassed and fatigued in its march will renew its step and change its aspect at the sound of the drum; Sailors, in winding the capstan, break out into a noisy but measured song. The harmonious sounds of a soothing ballad are even necessary to the road-leveller; and the powerful effects of music on the soldier's mind, in the hour of fancied glory, are well-known.

At Rome, no less than in Greece, was gymnastics pursued as an art necessary to the health of man. The elder Tarquin constructed the first Circus where the Roman youth performed gymnastic exercises. Before his time, they were performed in a vast enclosure bounded by the Tiber on the one side, and by palisades on all the other sides. It was to the practice of gymnastics and to the daily renewal of military exercises, that the Roman soldier owed those great physical qualities which rendered him so long victorious in the wars of the state. He would march twenty miles in five hours with a weight of more than sixty pounds. In the field, he would carry, besides his arms, his baggage, his tent, and provisions for fifteen days. According to the account of Sallust, the famous Pompey could take the field at the age of fifty-eight. But to the manly exercises of the Circus, succeeded the gory games of the gladiator; and later still, the dancing and the mimickry of the actor; then Rome, which had subdued the world, fell by luxury and effeminacy.

The gymnastics of the middle age consisted in tilts, tournaments, carousals, sham-fights, horsemanship, fencing, and breaking a lance; but these exercises were restricted to a class, and had for their object the maintenance of its superiority over the million. The modern invention of gunpowder put an end to this superiority, and brought mere physical force and training to a level. John de Medicis instituted the *calcio*, in imitation of the games of the ancients. The calcio is only the game of *foot-ball* raised to the rank of a military exercise. If this game could be played in moderation, and both hands and feet employed in the exercise, we know not a more delightful or a more healthy recreation; we look back upon our exercises in this game at the university with unmingled pleasure. The game of tennis used to be greatly in vogue during the last century; and particularly in France, before the first revolution. Since that period, it has greatly declined, and is now almost abandoned. In the present calculating age in which we live, we are forced to become serious betimes; young people early appointed to mental labour, and to the grappling with the difficulties which they have to encounter through life, neglect or disdain these games, in which, the youth of preceding ages not only found honourable recreation, but a salutary mode of developing the natural strength of the body.

The foot-ball, the skipping-rope, the hoop, the battledoor and shuttlecock, and various other games of this kind, which are now deemed only juvenile games, have the double advantage of not only developing the muscles of the different members of the body, but also the chest and lungs. England alone has retained the ancient pugilistic exercises of the Greeks and Romans, under the name of the art of *boxing*; and although we cannot but admire the effects of physical training which this art produces among professional boxers, the cruelty, immorality and neglect of mental culture which are usually its accompaniments, render it an unfit exercise for modern times. Nevertheless, the boxer, from his peculiar training and exercise, possesses large limbs, hard, projecting and elastic muscles; a small abdomen; a full chest, respiration large and deep; skin close, smooth, and transparent; and a uniform complexion, perfectly corresponding to the under-lying muscles. In like manner, and from equally adapted training, jockeys and divers acquire the developments necessary for their peculiar occupation.

(*To be continued.*)

LESSONS IN GERMAN.—No. LIII.

§ 24. Adjectives.

(1) Adjectives are, in German, generally so varied in termination, as to indicate thereby the gender, number and case of the words with which they are joined. Before treating of their inflection, however, we shall present and explain those significant suffixes, which are most commonly employed in forming adjectives from other words.

(2) Here, as was done in the case of derivative nouns (§ 10. § 11.), each suffix is given with its corresponding English equivalent; its meaning explained; and its use further illustrated by a series of examples.

§ 25. Suffixes used in forming adjectives.

Suffixes.	*English* equivalents.	
bar	[*able, ible, ile;*]	implies *ability*; sometimes, *disposition.*
en	[*en;*]	points to something *made of* that expressed by the radical.
haft	[*ive, ish;*]	denotes *tendency*, or *inclination*; also *resemblance.*
ig	[*y, ful;*]	represents a thing as being *full of* that denoted by the radical.
icht	[*y, ous, ish;*]	denotes *similarity of nature*, or *character.*
lich	[*ly, ish, able;*]	implies *likeness* or *sameness* either of manner or degree; also *ability.*
iſch	[*ish, some, ral;*]	represents something as *pertaining* or *belonging to.*
ſam	[*some, ible;*]	expresses *inclination*; sometimes *ability.*

§ 26. Examples.

Suffixes.	Words.	
bar	Dienſtbar;	serviceable; tributary.
	Sichtbar;	that *can be* seen; visible
en	Golden;	*made of* gold
	Blei(er)n; *	leaden.
haft	Tugendhaft;	*inclined* to virtue; virtuous.
	Meiſterhaft;	*resembling* a master; masterly.
ig	Blumig;	*full of* flowers; *abounding in* flowers.
	Blümicht;	flowery, that is, *like* flowers.
icht	Waldig;	woody, i. e. *abounding in* woods.
	Salzicht;	saltish; somewhat *like* salt.
lich	Brüderlich;	brotherly, or like a brother.
	Kränklich;	sickly.
	Süßlich;	sweetish; somewhat sweet.
	Beweglich;	movable.
iſch	Irdiſch;	earthly; *belonging to* earth.
	Poetiſch;	poetical.
	Zänkiſch;	quarrelsome.
ſam	Arbeitſam;	*inclined* to work; diligent.
	Folgſam;	inclined to follow (orders), i. e obedient.

iſch is the ending commonly added to names of places pointing to things belonging to them; as, engliſch, ſchwediſch (§ 5 Note VII), &c. If, however, a name be a compound, the suffix er is used in place of iſch; as, das Merſeburger Bier, the Merseburg beer.

§ 27. Declenison of adjectives.

(1) Whether an adjective is to be inflected at all or not, depends wholly upon the way in which it is used; for, when employed as a predicate, it is *never* declined:† when as an attributive, almost *always*. Be the noun, therefore, masculine, feminine or neuter; be it singular or plural; if the adjective, to which it is applied, be used as a *predicate* (Sect. X. Note.), its form remains unchanged: thus,

Der Mann iſt gut; the man is good.
Die Frau iſt gut; the woman is good.
Das Kind iſt gut; the child is good.
Die Männer ſind gut; the men are good.
Die Frauen ſind gut; the women are good.
Ich nenne das Kind ſchön; I call the child beautiful.
Ich nenne die Kinder ſchön; I call the children beautiful.
Der Knabe, klug und artig; the boy prudent and polite.

In this last example, the *predicative* use of the adjectives may be made more obvious, by completing the structure, thus: der Knabe, welcher klug und artig iſt; the boy who *is* prudent and polite: so also, Cäſar, klug und tapfer.

(2) The following adjectives (and a few others) are never used otherwise than as predicates, and are, of course, indeclinable:

abhold, averse.	habhaft, possessing, or possessed of.
angſt, anxious.	handgemein, skirmishing.
anheiſchig, bound by promise.	irre, wrong; erring.
bereit, ready.	kund, known.
brach, fallow.	feind, hostile.
leid, distressing; sorry.	gehaßt, hating, hated.
noth, needful.	gar, done; cooked enough.
nütze, useful.	gäng und gebe, current; usual.
quer, crosswise.	eingedenk, mindful.
quitt, rid of.	getroſt, cheerful.
theilhaft, sharing.	gewärtig, aware.
unpaß, ill; sick.	gram, grudge-bearing.
verluſtig, forfeiting.	

§ 28. Declinable adjectives.

(1) There are two declension of adjectives, as there are two declension of nouns: the Old and the New. In either of these, according to circumstances, are *attributive* adjectives declined. The following are the terminations of

The Old Declension.

	Singular.			*Plural.*
	Masculine.	*Feminine.*	*Neuter.*	*For all genders.*
Nom.	er.	e.	es.	Nom. e.
Gen.	es (en).	er.	es (en)	Gen. er.
Dat.	em.	er.	em.	Dat. en.
Acc.	en.	e.	es.	Acc. e.

Adjectives ending in el, en, er, commonly drop the e upon receiving a suffix; as,

edel, noble:	edler, (not edeler) Mann, noble man.
eben, even;	ebner (not ebener) Weg; even path.
lauter, pure;	lautres (not lauteres) Gold; pure gold.

Upon adding en, the e of the termination (en) is dropped, while that of the root is retained; as, den heitern (instead of heitren) Morgen; the serene morning.

In the nominative and accusative neuter the termination es is often omitted, when the adjective is under no special emphasis; as, kalt (for kaltes) Waſſer, cold water.

In the genitive singular masculine and neuter, it is now the common custom to adopt the *new* instead of the *old form*; en for the sake of euphony, being substituted for es: as, ein Stück friſch en (not es) Brodes, a piece of fresh bread. In a few adverbial phrases, however, the old form is still generally used; as, gutes Muthes, of good courage.

Rule for adjectives.

When the adjective stands either entirely *alone* before its substantive, or is preceded and restricted by a word that is undeclined or indeclinable, it follows the Old form of declension;

* The letters er in this word are simply *euphonic*; while the e of en is dropped, also, for euphony (§ 2. (8).)

† For the form of the adjective substantively employed after nichts or etwas, see Sect. 15. IV

EXAMPLES.

Singular	*Plural*
Masculine.	
N. guter Vater, good father.	gute Väter, good fathers.
G. gutes (en) Vaters, of good father.	guter Väter, of good fathers.
D. gutem Vater, to good father.	guten Vätern, to good fathers.
A. guten Vater, good father.	gute Väter, good fathers.
Feminine.	
N. gute Mutter, good mother.	gute Mütter, good mothers.
G. guter Mutter, of good mother.	guter Mütter, of good mothers.
D. guter Mutter, to good mother.	guten Müttern, to good mothers.
A. gute Mutter, good mother.	gute Mütter, good mothers.
Neuter.	
N. gutes Geld, good money.	gute Gelder, good monies.
G. gutes (en) Geldes, of good money.	guter Gelder, of good monies
D. gutem Gelde, to good money.	guten Geldern, to good monies.
A. gutes Geld, good money.	gute Gelder, good monies.

(1) The following are examples, in which the adjective in each instance is preceded by a word, either undeclined or indeclinable:

Etwas guter Wein,	some good wine.
Viel frische Milch,	much fresh milk.
Wenig kalles Wasser,	a little cold water.
Sehr gute Menschen,	very good men.
Genug rother Wein,	enough red wine.
Fünf lange Jahre,	five long years.
Allerlei süße Frucht.	all kinds of sweet fruit.

§ 30. THE NEW DECLENSION.

	Singular.			*Plural.*
	Mas.	*Fem.*	*Neut.*	*For all genders.*
Nom.	e.	e.	e.	en.
Gen.	en.	en.	en.	en.
Dat.	en.	en.	en.	en.
Acc.	en.	e.	e.	en.

§ 31. RULE FOR ADJECTIVES.

(1) When immediately preceded and restricted by the definite *article*, by a relative or demonstrative *pronoun*, or by an indefinite *numeral, declined after the ancient form*, the adjective follows the new form of declension:

EXAMPLES.

Singular.

Masculine.	*Feminine.*	*Neuter.*
N. der gute Mann, the good man.	die gute Frau, the good woman.	das gute Kind, the good child.
G. des guten Mannes, of the good man.	der guten Frau, of the good woman.	des guten Kindes, of the good child.
D. dem guten Manne, to the good man.	der guten Frau, to the good woman	dem guten Kinde, to the good child.
A. den guten Mann, the good man.	die gute Frau, the good woman.	das gute Kind, the good child.
Plural.		
N. die guten Männer, the good men.	die guten Frauen, the good women.	die guten Kinder, the good children.
G. der guten Männer, of the good men.	der guten Frauen, of the good women.	der guten Kinder, of the good children.
D. den guten Männern, to the good men.	den guten Frauen, to the good women.	den guten Kindern, to the good children.
A. die guten Männer, the good men.	die guten Frauen, the good women.	die guten Kinder, the good children.

Das, however, the *neuter* of the definite article, differs from the old form, in having the ending as, instead of es; so also in compounds; as, dasselbe, the same; dasjenige, that. The other words referred to in the rule, are

dieser, this.	solcher, such.	einiger, some; several.
jener, that.	jeder, jeglicher, each.	etlicher, some; several.
welcher, who; which.	aller, every; all.	mancher, many a.

Three of these, it may further be noticed, viz. welcher, welche, welches, which; solcher, solche, solches, such; and mancher, manche, manches, many a; sometimes appear without the terminations of declension: in which case the adjective asumes the suffixes denoting gender, &c. Thus, manch schönes Bild, many a beautiful picture.

OTHER EXAMPLES.

Singular.	*Plural.*
Masculine.	
N. dieser schöne Garten, this beautiful garden.	diese schönen Gärten, these beautiful gardens.
G. dieses schönen Gartens, of this beautiful garden.	dieser schönen Gärten, of these beautiful gardens.
D. diesem schönen Garten, to this beautiful garden.	diesen schönen Gärten, to these beautiful gardens.
A. diesen schönen Garten, this beautiful garden.	diese schönen Gärten, these beautiful gardens.
Feminine.	
N. welche schöne Blume, what beautiful flower.	welche schönen Blumen, what beautiful flowers.
G. welcher schönen Blume, of what beautiful flower.	welcher schönen Blumen, of what beautiful flowers.
D. welcher schönen Blume, to what beautiful flower.	welchen schönen Blumen, to what beautiful flowers.
A. welche schöne Blume, what beautiful flower.	welche schönen Blumen, what beautiful flowers.
Neuter.	
N. manches schöne Feld, many a beautiful field.	manche schönen Felder, many beautiful fields.
G. manches schönen Feldes, of many a beautiful field.	mancher schönen Felder, of many beautiful fields.
D. manchem schönen Felde, to many a beautiful field.	manchen schönen Feldern, to many beautiful fields.
A. manches schöne Feld, many a beautiful field.	manche schöne Felder, many beautiful fields.

With many authors it is the custom to reject the final n of the nom. and acc. plural of adjectives preceded by einige, etliche, mehrere, manche, viele, alle, welche, solche and wenige: as, einige deutsche Kaiser, some German emperors.

LESSONS IN FRENCH.—No. LXIII.

By Professor Louis Fasquelle, LL.D.

LIST OF IRREGULAR VERBS, &c. (*continued from page 161*).

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
CONSTRUIRE, 4. *to construct*	construisant construit, *f.* e.	je construis *see* CONDUIRE	je construisais	je construisis	je construirai	je construirais	construis	je construise	je construisis-[se
CONTENIR, 2. *to contain*	contenant contenu, *f.* e.	je contiens *see* TENIR	je contenais	je contins	je contiendrai	je contien-[drais	contiens	je contienne	je continsse
CONTRAINDRE, 4. *to constrain*	contraignant contraint, *f.* e.	je contrains *see* CEINDRE	je contraignais	je contraignis	je contrain-[drai	je contrain-[drais	contrains	je contraigne	je contraignis-[se
CONTREDIRE, 4. *to contradict.* aux. avoir	contredisant contredit, *f.* e.	je contredis tu contredis il contredit n. contredisons v. contredisez i. contredisent	je contredisais *like* DIRE	je contredis *like* DIRE	je contredirai *like* DIRE	je contredirais *like* DIRE	contredis q. contredise contredisons contredisez q. contredisent	je contredise	je contredisse
CONTREFAIRE 4. *to counterfeit*	contrefaisant contrefait, *f.* e.	je contrefais *see* FAIRE	je contrefai-[sais	je contrefis	je contrefera i	je contrefera is	contrefais	je contrefasse	je contrefisse
CONTREVENIR 2. *to contravene*	contrevenant contrevenu *f.* e.	je contreviens *see* TENIR	je contreve-[nais	je contrevins	je contrevien-[drai	je contrevien-[drais	contreviens	je contrevien-[ne	je contrevinsse
CONVAINCRE, 4. *to convince*	convainquant convaincu, *f.* e.	je convaincs	je convain-[quais	je convainquis	je convaincrai	je convaincrais	convaincs	je convainque	je convain-[quisse
CONVENIR, 2. *to suit, fit, &c*	convenant convenu, *f.* e.	je conviens *see* TENIR	je convenais	je convins	je conviendrai	je convien-[drais	conviens	je convienne	je convinsse
COQUETER, 1. *to coquet*	coquetant coqueté	je coquète *see* ACHETER	je coquetais *peculiar.*	je coquetai	je coquèterai	je coquèterais	coquète	je coquète	je coquetasse
CORROMPRE, 4. *to corrupt*	corrompant corrompu, *f.* e.	je corromps *see* ROMPRE	je corrompais	je corrompis	je corromprai	je corromprais	corromps	je corrompe	je corrompisse
COUDRE, 4. *to sew* aux. avoir irregular.	cousant cousu, *f.* e.	je couds tu couds il coud n. cousons v. cousez ils cousent	je cousais tu cousais il cousait n. cousions v. cousiez ils cousaient	je cousis tu cousis il cousit n. cousîmes v. cousîtes ils cousirent	je coudrai tu coudras il coudra n. coudrons v. coudrez ils coudront	je coudrais tu coudrais il coudrait n. coudrions v. coudriez i. coudraient	couds q. couse cousons cousez q. cousent	je couse tu couses il couse n. cousions v. cousiez i. cousent	je cousisse tu cousisses il cousît n. cousissions v. cousissiez ils cousissent
COURIR, 2. *to run* aux. avoir irregular.	courant couru	je cours tu cours il court n. courons v. courez ils courent	je courais tu courais il courait n. courions v. couriez ils couraient	je courus tu courus il courut n. courûmes v. courûtes ils coururent	je courrai tu courras il courra n. courrons v. courrez ils courront	je courrais tu courrais il courrait n. courrions v. courriez ils courraient	cours q. coure courons courez q. courent	je coure tu coures il coure n. courions v. couriez ils courent	je courusse tu courusses il courût n. courussions v. courussiez ils courussent
COUVRIR, 2. *to cover.*	couvrant couvert, *f.* e.	je couvre *see* OUVRIR	je couvrais	je couvris	je couvrirai	je couvrirais	couvre	je couvre	je couvrisse
CRAINDRE, 4. *to fear*	craignant craint, *f.* e.	je crains *see* CEINDRE	je craignais	je craignis	je craindrai	je craindrais	crains	je craigne	je craignisse
CROIRE, 4. *to believe* aux. avoir irregular.	croyant cru, *f.* e.	je crois tu crois il croit n. croyons v. croyez ils croient	je croyais tu croyais il croyait n. croyions v. croyiez ils croyaient	je crus tu crus il crut n. crûmes v. crûtes ils crurent	je croirai tu croiras il croira n. croirons v. croirez ils croiront	je croirais tu croirais il croirait n. croirions v. croiriez ils croiraient	crois q. croie croyons croyez q. croient	je croie tu croies il croie n. croyions v. croyiez ils croient	je crusse tu crusses il crût n. crussions v. crussiez ils crussent
CROÎTRE, 4. *to grow* aux. avoir and être irregular.	croissant crû, *f.* e.	je crois tu crois il croît n. croissons v. croissez ils croissent	je croissais tu croissais il croissait n. croissions v. croissiez ils croissaient	je crûs tu crûs il crût n. crûmes v. crûtes ils crûrent	je croîtrai tu croîtras il croîtra n. croîtrons v. croîtrez ils croîtront	je croîtrais tu croîtrais il croîtrait n. croîtrions v. croîtriez ils croîtraient	crois q. croisse croissons croissez q. croissent	je croisse tu croisses il croisse n. croissions v. croissiez ils croissent	je crûsse tu crûsses il crût n. crûssions v. crûssiez ils crûssent
CUEILLIR, 4. *to gather*	cueillant cueilli, *f.* e.	je cueille tu cueilles il cueille n. cueillons v. cueillez ils cueillent	je cueillais tu cueillais il cueillait n. cueillions v. cueilliez ils cueillaient	je cueillis tu cueillis il cueillit n. cueillîmes v. cueillîtes ils cueillirent	je cueillerai tu cueilleras il cueillera n. cueillerons v. cueillerez ils cueilleront	je cueillerais tu cueillerais il cueillerait n. cueillerions v. cueilleriez i. cueilleraient	cueille q. cueille cueillons cueillez q. cueillent	je cueille tu cueilles il cueille n. cueillions v. cueilliez i. cueillent	je cueillisse tu cueillisses il cueillît n. cueillissions v. cueillissiez ils cueillissent
CUIRE, 4. *to bake, cook, &c.*	cuisant cuit, *f* e.	je cuis *see* CONDUIRE	je cuisais	je cuisis	je cuirai	je cuirais	cuis	je cuise	je cuisisse
DÉBATTRE, 4. *to debate*	débattant débattu, *f.* e.	je débats *see* BATTRE	je débattais	je débattis	je débattrai	je débattrais	débats	je débatte	je débattisse
DÉCACHETER, 1. *to unseal*	décachetant décacheté, *f.* e.	je décachette § 49, (4)	je décachetais	je décachetai	je décachet-[terai	je décachet-[terais	décachette	je décachette	je décache-[tasse
DÉCHOIR, 2. *to decay* aux. avoir and être defective	déchu, *f.* e.	je déchois tu déchois il déchoit n déchoyons v dechoyez ils déchoient (*Bescherelle*)	je déchoyais tu déchoyais il déchoyait n. déchoyions v. déchoyiez ilsdéchoyaient	je déchus tu déchus il déchut n. déchûmes v. déchûtes ils déchurent	je décherrai tu décherras il décherra n. décherrons v. décherrez ils décherront	je décherrais tu décherrais il décherrait n. decherrions v. décherriez i. décherraient	déchois q. déchoie déchoyons déchoyez q. déchoient	je déchoie tu déchoies il déchoie n. déchoyions v. déchoyiez ils déchoient	je déchusse tu déchusses il déchût n. déchussions v. déchussiez ils déchussent
DÉCOUDRE, 4. *to rip*	décousant décousu, *f.* e.	je découds *see* COUDRE	je décousais	je décousis	je découdrai	je découdrais	découds	je découse	je décousisse
DÉCOUVRIR, 2. *discover*	découvrant découvert, *f.* e.	je découvre *see* OUVRIR	je découvrais	je découvris	je découvrirai	je découvrirais	découvre	je découvre	je découvrisse

List of Irregular Verbs, &c., continued.

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
DÉCRIRE, 4. *to describe*	décrivant décrit, *f.* e.	je décris *see* ÉCRIRE	je décrivais	je décrivis	je décrirai	je décrirais	décris	je décrive	je décrivisse
DÉDIRE, 4. *to unsay*	dédisant dédit, *f.* e.	je dédis *see* CONTRE-[DIRE	je dédisais	je dédis	je dédirai	je dédirais	dédis	je dédise	je dédisse
DÉDUIRE, 4. *to deduct*	déduisant déduit, *f.* e.	je déduis *see* CONDUIRE	je déduisais	je déduisis	je déduirai	je déduirais	déduis	je déduise	je déduisisse
DÉFAILLIR, 2. *to fail, faint* defective.	défaillant défailli (*Bescherelle*)	il défaille n. défaillons v. défaillez ils défaillent	je défaillais, &c.	je défaillis, &c.	*see Bescherelle, Dictionnaire National.*				
DÉFAIRE, 4. *to undo*	défaisant défait, *f.* e.	je défais *see* FAIRE	je défaisais	je défis	je déferai	je déferai	défais	je défasse	je défisse
DÉGELER, 1. *to thaw*	dégelant dégelé, *f.* e.	il dégèle	il dégelait	il dégela	il dégèlera	il dégèlerait	q. dégèle	il dégèle	il dégelât
DÉJOINDRE, 4 *to disjoin*	déjoignant déjoint, *f.* e.	je déjoins *see* CEINDRE	je déjoignais	je déjoignis	je déjoindrai	je déjoindrais	déjoins	je déjoigne	je déjoignisse
DÉMENTIR, 2. *to belie*	démentant démenti, *f.* e.	je démens *see* SENTIR	je démentais	je démentis	je démentirai	je démentirais	démens	je démente	je démentisse
DÉMETTRE, 4. *to disjoint*	démettant démis, *f.* e.	je démets *see* METTRE	je démettais	je démis	je démettrai	je démettrais	démets	je démette	je démisse
DÉPEINDRE, 4. *to depict*	dépeignant dépeint, *f.* e.	je dépeins *see* CEINDRE	je dépeignais	je dépeignis	je dépeindrai	je dépeindrais	dépeins	je dépeigne	je dépeignisse
DÉPLAIRE, 4. *to displease*	déplaisant déplu, *f.* e.	je déplais *see* PLAIRE	je déplaisais	je déplus	je déplairai	je déplairais	déplais	je déplaise	je déplusse
DÉSAPPRENDRE, 4. *to unlearn*	désapprenant désappris, *f.* e	je désap-[prends *see* PRENDRE	je désappre-[nais	je désappris	je désappren-[drai	je désappren-[drais	désapprends	je désappren-[ne	je désapprisse
DESSERVIR, 2. *to clear the table*	desservant desservi, *f.* e.	je dessers *see* SERVIR	je desservais	je desservis	je desservirai	je desservirais	dessers	je desserve	je desservisse

CORRESPONDENCE.

ELOCUTION.

MR. EDITOR,—I wish to call your attention to a branch of adult education which is greatly neglected; and this neglect is remarkably exhibited in all our public institutions, as well as in every large assembly of men who meet to investigate or discuss any question of poetical, social, or religious importance. From the debates in the house of commons down to the vestry squabbles of a parish, a neglect of the principles of elocution is equally and painfully apparent. A great number of public men speak in a low, inward, indistinct kind of voice, either disagreeably rapid, or vexatiously slow; while others clip or shorten their words in such a manner that it is impossible to hear what they say; and we are thus compelled to guess at their meaning from that part of their words or discourse which we do hear. Now such speakers are perhaps not so deficient in power as they are in utterance; they may be able to compose eloquent orations, which read well enough in the public papers, if they chance to get there, but which produce very little effect on their hearers. This lamentable deficiency in our public speakers may be mainly attributed to the want of a proper education. Elocution has almost ceased to be a part of our scholastic routine, as if the cultivation of that faculty for which we have daily and hourly occasion in the affairs of life, were deemed a matter of trivial moment. Can it be supposed that an accomplishment, to the acquisition of which some of the most distinguished characters in history have devoted the greatest part of their lives, is to be learned without instruction? The practice of the ancients may be fairly adduced in opposition to such a presumption. The Greeks and the Romans, who considered a high degree of education necessary for their public men, ranked the art of *public speaking* as one of the most important studies to which the attention of their youth, and especially those of the higher classes of society, could be directed.

It is hardly necessary, in the present age, to insist greatly on the advantages enjoyed by those who possess an easy, elegant and forcible manner of expressing their thoughts, unabashed or unembarrased by the number or the dignity of their hearers. Still there are two classes who occasionally urge objections to the cultivation of the art of elocution, especially by those whose trade or profession does not call them to exercise this art as a means of procuring their livelihood. The first class are those ignorant people who ask What is the use of elocution? This question is rational, and even philosophical, if put with a proper desire for information; but it is rude and shallow when put by those who do not wish for an answer. But these would-be sarcastic questioners might be asked a question in return: Supposing that there is no use in the acquirements of the ready and accomplished speaker, are they quite sure that their time has been more profitably employed than in the acquisition of so agreeable an art? The second class are those prejudiced persons who, by some accident, seem to have come into the world a century too late, and who, deploring these days of general (I wish I could say universal) education, believe that they discover great mischief in the study of the art of public speaking; who think that it takes young men away from their legitimate occupations, and implants in their minds extreme notions of every thing and improper ideas of their own importance; and who imagine that, if pursued to a great extent, this art would lead the possessors of it to certain and utter ruin! Visions of late hours, sad profligacy, and great political offences, flit through the minds of these unhappy persons, like the gigantic phantoms and terrible dreams which visit the sleep of a man who is suffering from an overloaded stomach or an impaired digestion. For the satisfaction of such objectors, who either from a vacant mind or a perverted judgment, believe that the study of elocution is the source of so many evil consequences, I wish to assure them that they are mistaken; and to add, that it teaches man to know exactly his own weight and value in society; to understand his own mental resources in case of need; and to measure his own capacity by that of his respected and honourable opponents. I have thus hinted at the advantages of the study of elocution; and I hope to see the subject taken up in the pages of the "Popular Educator," having been a subscriber to it from the beginning.

J. FEAKES PORTER.

Ray street, Clerkenwell.

LESSONS IN MECHANICS.—No. XVII.

ROAD-MAKING AND PUBLIC WORKS—(*continued*).

CANALS.

IN speaking of tunnels, we have made allusion to canals. Some of our largest tunnels are associated with these highways of inland navigation. Rivers are, of course, Nature's highways; and a well-watered country, where the rivers flow wide and deep, has many advantages over others. The facility afforded by rivers for transit from one place to another would be seen at a very early period—so soon as men found out that they might travel safely on the stream with no better help than the trunk of a tree or a raft of timber. Hence we find that most large cities and populous towns have sprung up on the banks of navigable rivers. But such means of internal navigation are not to be found everywhere, and consequently canals—artificial rivers, called into being

by the engineer—have been constructed, and form their best substitute.

Canals appear to have been well known and extensively employed in ancient times, and one of the largest in the world is found in China—an extraordinary work, almost as surprising, and certainly more useful, than China's famous wall. It is, however, in modern times that canal-making has risen to very great importance; and rapid as its growth has been, its decline promises to be as rapid. The Earl of Bridgewater was the great patron of canal-making, and he grew rich upon it—to him they were as the fabled Pactolus, whose sands were of gold. But he it was who saw in the iron tramways a formidable opposition rising up; he saw that the iron roads would ultimately—aye, and that soon—get the better of the canal. Brindley was the great canal-maker—mighty at puddling—and the works of this man, the first so-called civil engineer, were of no ordinary value. Brindley had an intuitive perception of what could be done, and of how it should be done, that could never be learned by seven apprenticeships—a hard-working, practical man, who had taken honours in the school of experience.

In the system of inland navigation, the United States of America is said to be without its equal in the world. The great line of canal connecting the Hudson with Lake Erie is among the most stupendous. As first constructed, this canal, with its branches, cost £2,600,000; but its magnitude being found inadequate for the traffic, the dimensions of the canal were extended, and it was finally completed at a cost of £5,000,000. The total length is 363 miles. The artificial water communications throughout the States now amount to nearly 5,000 miles, and the skill and perfection with which they are executed would do no discredit to the most accomplished European engineer.

A system of artificial water communication is supplied by canals in any country, whatever its condition may be. In the East, beneath the burning sun of Egypt, and where rain is almost entirely unknown, the famous canal known as the Mahmoudie has been constructed. It was cut in the year 1819, by order of Mehemet Ali, and was completed in seven months; but not without an awful sacrifice of life, 35,000 having been said to have perished. This canal is 70 miles in length. When originally constructed it was found very useful, but the iron roads are fast supplanting it.

At the best, canals afford but a slow method of progress—not the rapidity required in our fast age. They are made after the pattern of the old highways, and the canal-boats are as cumbersome as the old-fashioned wagons. The towing path, the team, the heavy barge are out of keeping with our ideas of travelling. To be sure, some improvements have been made; things are better and go faster on canals than they did; but the improvement came tardily, and the iron tramway was a long way ahead of it.

In speaking of the successful attempts made to introduce swift boats on canals, and the great improvement effected thereby in canal navigation, Sir John Rennie remarks: "All this, however, came too late; for although it would have been readily acknowledged at an earlier period, and might perhaps for awhile have retarded the railway system, yet when once the latter was established, its superiority became manifest, and its progress irresistible."

CANAL BOAT.

To the Earl of Bridgewater, as we have before intimated, this was plain enough; he saw what must be the end of it; but it was his consolation to know "it will last my time."

Although very much of this is true with regard to ordinary transport from town to town, it does not apply with any particular force to what are known as ship canals—canals which afford to seaborne vessels an inland course, and enable them to avoid the dangers of a lengthened coasting voyage—such as the Forth and Clyde Canal, projected by Smeaton in 1766, and the Crinan Canal, executed by Rennie; the great North Holland Canal, which extends from Amsterdam to the Helder, a distance of 51 miles; and the Caledonian Canal, projected by Watt and Jessop, but executed by Telford, extending a distance of 60 miles, from Inverness to Fort William.

The most important canal now projected is that of Suez. Most of our practical men have pronounced it impracticable, but the French engineers are of a contrary opinion. The objection raised against it, that it was made the means of forced labour, is no longer tenable, thanks to the reigning Pasha. It would, if completed, be carried right across the Isthmus, and would shorten the route to India, thus:—

From	Via Suez Canal.	Via Cape.	Difference.
	Miles.	Miles.	Miles.
London	3,100	5,950	2,850
Liverpool	3,050	5,900	2,850
New York	3,761	6,200	2,439
New Orleans	3,724	6,450	2,726
Amsterdam	3,100	5,950	2,850
St. Petersburgh	3,700	6,550	2,850
Havre	2,824	5,800	2,976
Bordeaux	2,800	5,650	2,850
Lisbon	2,500	5,350	2,850
Cadiz	2,224	5,200	2,976
Marseilles	2,374	5,650	3,276
Trieste	2,340	5,960	3,620
Malta	2,062	5,800	3,778
Constantinople	1,800	6,100	4,300

The project is that it should be 21 feet deep, walled; 96 feet wide, and 180 feet at the water line, to flow from the head of the Red Sea to the Mediterranean at Tineh. If this scheme be practically carried out, there is no doubt that it would be of immense advantage.

ANSWERS TO CORRESPONDENTS.

A Pianoforte Maker: Your communication shall be forwarded to the right quarter.—J. Austin should consult a seal-engraver—one who "finds arms." We have no space or time to devote to the matter.

A Would-be Farmer.—Greek after Latin. A number is divisible by 8 when its three last figures are divisible by 8, because 8 is the cube of 2, and 2 is one of the factors of the number 10, the radix of the decimal scale.

H. C.—It is common enough for persons to employ incorrect phraseology, and still be perfectly intelligible; but it does not follow that because they are understood they speak grammatically. False orthography may be intelligible, but it is still *bad* spelling. We can read, and suppose we comprehend, our correspondent's epistle; but that correspondent spells "together" with an *a*, "grammar" with an *e*, and alludes to "*Mr.* Beard, *D.D.*" We know what the writer means, but his composition is very faulty, and the fact of his meaning being intelligible does not invalidate this charge.

Aie.—There is no attempt made to give the meaning of *ch*, as far as we can see; we think "Aie" is hypercritical; but we must, no doubt, consider this a benefit conferred on us; for

> "*Critics*, indeed, are valuable men,
> But *hypercritics* are as good again."

Three Tyros.—Your resolution is commendable. If all our young men between the ages of nineteen and twenty-one were equally well-intentioned, it would be well for themselves and society. Here are three youths sedulously devoting themselves to those studies which are practically useful to them in their ordinary avocations. They are clerks. To write a good hand, to indite a well-expressed letter, to be ready at figures, to know enough of French and German to be able to translate a letter or invoice, are just precisely those branches of education which are of most importance to them. To these subjects they are directing their attention. We may recommend to their notice our "Hand-book of Business," price, per post free, 1s. 1d. To be first-rate clerks is what these young men aspire to be. The aspiration is honest. Everybody—gentleman, farmer, trader, clerk, artisan, errand-boy—should strive to be *first-rate* in their own position.

H. T. M.—Dementate means *infatuated, insane*; meteyard, *a staff of a certain length wherewith measures are taken*; molar, *having power to grind*; nihility, *nothingness, the state of being reduced to nothing*; otiose, *at leisure, unoccupied*; normal, *according to rule, properly regulated, standard*.—Alpha (Brecon): His case is so peculiar, that we can scarcely offer him our advice. We would recommend English and French, or English and Latin, to be studied together, and history, botany, &c., for recreation. Our object in inserting the Regulations of the University of London was to give some clue or guide to the order and arrangement of studies.—E. Lord (Manchester) and his friends are informed that the rule concerning "a vowel which comes before two consonants is long by position," is quite correct. To fix pencil drawings so as not to smear by contact with another leaf, pass over them a little milk and water, taking care that all the cream be first skimmed off; or a *very weak* solution of isinglass in water. The liquid should be passed over *quickly* with a flat camel's-hair brush.

LESSONS IN GERMAN PRONUNCIATION.—No. I.

The object of learning a modern language is not simply, as in the case of one that is no longer spoken, to be able to read and write, but also to speak it. For this purpose it is obviously necessary to acquire a knowledge of the pronunciation as well as the meaning of the words. Hence we are not surprised at having received many applications from the readers of our lessons in German for some instruction on this subject; and it is our intention to publish in the pages of the POPULAR EDUCATOR a series of German Reading Lessons expressly prepared with a view to teach the proper pronunciation of the language. These lessons will be found much better adapted to answer the purpose than any mere collection of rules, however carefully drawn up, and however clearly expressed. In no case is the principle, that example is better than precept, more applicable than in that of pronunciation, a knowledge of which can only be acquired by frequent exemplification. We have no hesitation in saying, that the study of our lessons will enable the reader to pronounce German, if not with absolute perfection, at least so as to be easily understood by a native, which is after all the only practical object in view.

It is proper to observe, that while the lessons are especially intended to teach pronunciation, they are also calculated to be very useful to our readers as exercises in translation, being easy in construction, simple in style, rich in words, and adapted in substance to persons of all ages. A vocabulary will be appended to each lesson, containing an explanation of the meaning of every word in it which has not been previously explained. As few words will be explained more than once in the whole course of the vocabularies, it will be necessary for the learner to study each with great care on its first occurrence, that he may avoid the inconvenience of having to look through preceding numbers for the meaning.

DIRECTIONS FOR THE USE OF THE INTERLINEAR PRONUNCIATION.

Pronounce every syllable as in English.

To make a vowel long, which otherwise would be short, or might be either short or long, an apostrophe has been placed immediately after that vowel. Thus "foot" will rhyme with "put," but "foo't," will rhyme with "boot."

To make a vowel short which otherwise would be long, or might be either long or short, the short sign or breve has been placed over that vowel. Thus "mild" will rhyme with "wild," but "mĭld" will rhyme with "build." "Boot" will rhyme with "root," but "bŏŏt" will rhyme with "put."

âh is long, and sounded as in *father*, *á* is short, and sounded as in *castle*.

ey is to be pronounced as in *obey*.

ai, representing the short sound of *e*, when unaccented and terminating a syllable, should be pronounced like *ey* in the noun *sur'-vey*. The letters *ey* could not well be used for this sound, as they have generally the sound of *ee* when unaccented.

ö has no corresponding sound in English; place the organs as if to pronounce *o* long, keep them exactly in this position, and then try to pronounce the German *e* or English *a*. For the short sound of this vowel place the organs again as if to pronounce *o*, and without changing try to pronounce *of*, *el*, *ech*, *em*, *en*, *ep*, *er*, *ess*, *et*, and you will utter the sound required. The sound which comes nearest to it is the *e* in *her*.

ü has no parallel in English. Pronounce *oo* in *ooze*, firmly maintain this position, and try to pronounce long *e* in *eel*, the sound uttered will be the one required. For the short sound, place the organs in a similar position, and without changing it try to say: *if*, *il*, *ick*, *im*, *in*, *ip*, *ir*, *iss*, *it*. For those who have studied French it may be well to remark that the German *ü* has the same sound as the French *u*.

ou, is always to be sounded as in *out*, *our*.

gh before *e* and *i* must be pronounced like *g* in get, gimlet.

The sound of *ch* has no equivalent in English, but is a guttural sound like the *ch* in the Scotch word *loch*, and is very common in Irish. An approximation may be made to it by breathing through the throat at the time of pronouncing the letter *k*.

Das Rothkehlchen.

Dass rote'-kail-chen

Ein Rothkehlchen kam in der Strenge des Winters an
Ine rote'-kail-chen kâhm in dair streng'-ai dess vin-ters ân
das Fenster eines frommen Landmanns, als ob es gern
dâss fen'-ster i'-ness from'-men lânt'-mânnss, âlss, op ess gairn
hinein möchte. Da öffnete der Landmann sein Fenster
hin-ine' möch-tai. Dâh öf'-nai-tai dair lânt'-mân zine fen'-ster
und nahm das zutrauliche Thierchen freundlich in
öönt nâhm dâss tsoo'-trou-lich-che teer'-chen froint'-lich in
seine Wohnung. Nun pickte es die Brosamen und
zi'-nai vo'-nöönk. Noon pick'-tai ess dee bro'-zâh-men öönt
Krümchen auf, die von seinem Tische fielen. Auch hiel-
krüm'-chen ouf, dee fon zi'-nem tish'-shai fee'-len. Ouch heel'-
ten die Kinder des Landmanns das Vöglein lieb und
ten dee kin'-der dess lânt'-mânns, dâss fö'ch'-line leep öönt
werth. Aber als nun der Frühling wieder in das Land
vairt. âh'-ber âlss noon dair früh'-link vee'-der in dâss lânt
kam und die Gebüsche sich belaubten, da öffnete
kâhm öönt dee gai-büsh'-shai zich bai-laup'-ten, dâh öf'-nai-tai
der Landmann sein Fenster, und der kleine Gast entflog
dair lânt'-mân zine Fen'-ster, öönt dair kli'-nai gâst ent'-floch
in das nahe Wäldchen, und bauete sein Nest und sang
in dâss nâh'-ai velt'chen, öönt bou,-ai-tai zine nest öönt zânk
sein fröhliches Liedchen.
zine frö'-lich-chess leet'-chen.

Und siehe, als der Winter wiederkehrte, da kam
öönt zee'-hai, âlss dair vin'-ter vee'-der-kair-tai, dâh kâhm
das Rothkelchen abermals in die Wohnung des Land-
dâss rote'-kail-chen âh'-ber-mâhlss in dee vo'-nöönk dess lânt-
manns und hatte sein Weibchen mitgebracht. Der Land-
mânss öönt hât'-tai zine vipe'-chen mit'-gai-bracht. Dair lânt'-
mann aber sammt seinen Kindern freuten sich sehr, als sie
mân âh'-ber zâmt zi'-nen kin'-dern froi'-ten zich zair, âlss zee
die beiden Thierchen sahen, wie sie aus den klaren Aeug-
dee bi'-den teer'chen zâh'en, vee zee ouss dain klâh'-ren oich-
lein zutraulich umherschauten; und die Kinder
line tsoo'-trou-lich öom hair'-shou'-ten; öönt dee kinder
sagten: Die Vögelchen sehen uns an, als ob sie
zâch'-ten: Dee fö'ghel-chen zey'-hen ööns ân, âls op zee
etwas sagen wollten.
et'-vâss zâh'ghen vol'-ten.

Da antwortete der Vater: Wenn sie reden könnten,
Dâh ânt'-vor-tai-tai dair fâh'-ter: Ven zee rai'-den könn-ten,
so würden sie sagen: Freundliches Zutrauen er
zo vür'-den zee zâh'-ghen: Froint'-lich-ches tsoo'-troun err-
weicket Zutrauen, und Liebe erzeuget Gegen-
veck,-et tsoo'-troun, öönt lee'-bai err-tsoi'ghet ghai'-ghen-
liebe!
lee'-bai!

[For the Vocabulary, containing the meanings of the words in this lesson, see page 196.]

LESSONS IN MUSIC.—No. XIX.

By John Curwen.

The tune "Melcombe" in our last lesson, and "Edgeware" in this, will illustrate to our pupils the effect of transition into the key of the dominant. We have given them in the new notation only, in order that our pupils may, after the lesson which follows the next, have an exercise in copying these tunes as well as others into the old notation.

Key E.

EDGEWARE.

M. 66.

(Music from Handel; Words by Barry Cornwall.)

d : m	r : s	f.m : r.d	r : s	m : l	fe : s		
Song should breathe of		*scents and flow - ers,*		Song should like a			
d : d	t₁ : s₁	d : t₁ .d	t₁ : s	d : d	r.d : t₁		
s : fe	s : —	s : d¹	l : s	m.s : d¹.t	l : s		
riv - er flow;		Song should bring back		scenes and hours,			
l₁ : r	s₁ : —	m : m	f : m	d : m.s	f : m		
m.s : d¹.t	t.l . l.s	s.f : m.s	r : —	s : d	m r : d		
That we loved, ah,		long - a go!		Song should bring back			
d.m : m.s	s.f : f.m	m.r : d	t₁ : —	d : d	t₁ : d		
s.m : r.d	r : d	s : d.r	t₁.f : m.r	m : r	d : —		
scenes and hours,		That we loved, ah,		long a - go.			
d : t₁.d	s₁ : d	d : d	s₁.t₁ : d.f₁	s₁ : t₁	d : —		

2 *Song from baser thoughts should win us;*
Song should charm us out of woe;
Song should stir the heart within us,
Like a patriot's friendly blow.

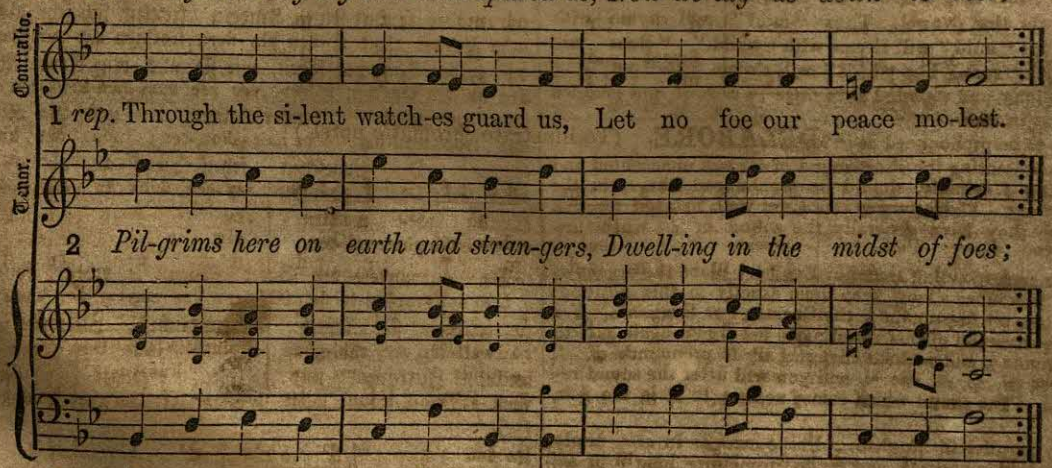
3. *Song should spur the mind to duty.*
Nerve the weak, and stir the strong:
Every deed of truth and beauty
Should be crowned with starry Song!

In the following tune, reprinted from the "Pianoforte and Full Score Edition" of Mr. Curwen's "People's Service of Song," our pupils will find an exquisite example of the sub-dominant transition. Notice the beautiful effect of fi in the third line. [Our friends who are studying the old notation will notice that the air of the tune is written on the third staff downward in large notes. The small notes are for the piano. The bass is on the lowest staff. The other parts are named at the beginning of each staff. Learners should put a square note, to represent the place of doh, on the middle line of the staff, except in the bass. There the doh (key-note) stands on the second line from the bottom. For the key is B flat.** Observe the dots, which indicate the repetition of music and the corresponding repetition of words.] The tune is also given in the new notation. But the arrangement is for two voices, not for four.

OBERLIN. 8, 7; 8, 7; 7, 7. Trochaic. (′·) M. 58.

Who is this, that comes from Edom? We are, Lord, a vineyard planted.

Verse 1 *Through the day thy love hath spared us, Now we lay us down to rest;*



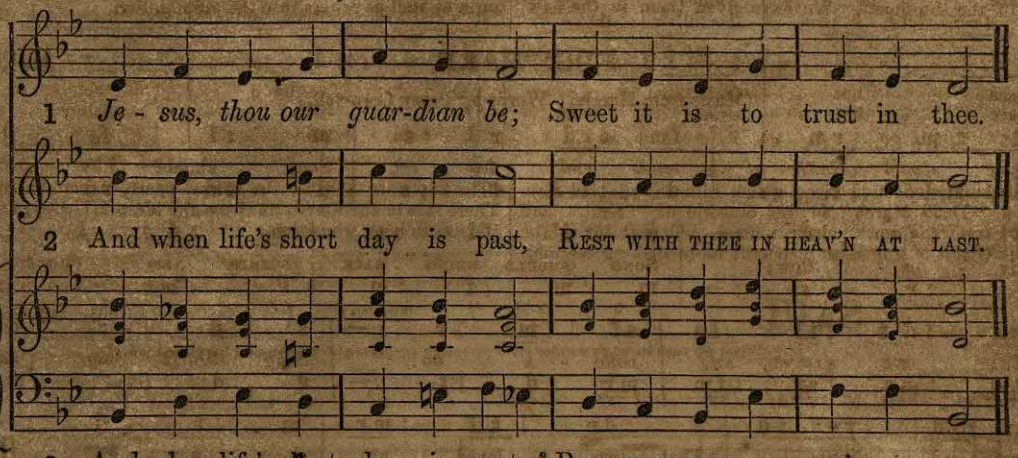
1 *rep.* Through the si-lent watch-es guard us, Let no foe our peace mo-lest.

2 *Pil-grims here on earth and stran-gers, Dwell-ing in the midst of foes;*

2 *rep.* Us and ours pre - serve from dan-gers: In thine arms may we re - pose;

OBERLIN, *(Continued).*

1 *Je - sus, thou our guar - dian be;* Sweet it is to trust in thee.



1 *Je - sus, thou our guar-dian be;* Sweet it is to trust in thee.

2 And when life's short day is past, REST WITH THEE IN HEAV'N AT LAST.

2 And when life's short day is past, REST WITH THEE IN HEAV'N AT LAST.

KEY B *flat.* (Music, German; Words by Kelly,) M. 58.

s₁ : d | t₁ : d	r : d.t₁ | d : d	m : m | r.d : t₁	l₁ : l₁ | s₁ : —	s₁ : d | t₁ : d	r : d.t₁ | d : d	m : m | r.d : t₁	d : t₁ | d : —
Through the day thy	love has spar'd us,	Now we lay us	down to rest.	Through the si - lent	watch - es guard us -	Let no foe our	peace mo - lest,
m₁ : d₁ | f₁ : m₁	r₁ : s₁ | m₁ : m₁	s₁ : d | t₁.d : s₁	s₁ : fe₁ | s₁ : —	m₁ : d₁ | f₁ : m₁	r₁ : s₁ | m₁ : m₁	s₁ : d | t₁.d : s₁	s₁ : fe₁ | s₁ : —

d : ta₁ | l₁ : l₁	m : r | d : —	r : d | t₁ : —	d : r | m : f
Je - sus now our	trust in Thee!	guar - dian be,	Sweet it is to
d₁ : m₁ | f₁ : m₁	s₁ : t₁ | d : —	r₁ : fe₁ | s₁ : f₁	m₁ : f₁ | s₁ : l₁

KEY E. **DELABORE.** (To illustrate chromatic notes.) M. 66.

m : f | f : s	l : s | s : m	s : f | f : m	m : — | r :	m : f | f : s	l : s | s : d¹	t : d¹ | l : d¹	l : — | s :
Peace be	to this	ha - bi -	ta - tion!	Peace to	all that	dwell there -	in!
Peace that	speaks the	hea'en - ly	giv - er;	Peace to	world - ly	minds un -	known.
d : r | r : m	f : m | m : d	m : r | r : d	d : — | t₁ :	d : r | r : m	f : m | m : d	r : m | f : fe	fe : — | s :

f : m | r : l	s : f | m : d¹	l : t | d¹ : r¹	d¹ : — | t	f : m | r : l	s : f | m : d¹	l : t | d¹ : r¹	d¹ : — | t
Peace, the di -	ear - nest	of sal -	va - tion!	Peace, the di -	ear - nest	of sal -	va - tion!
Peace di -	vine, that	lasts for	e - ver;	Peace di -	vine, that	lasts for	e - ver;
r : d | t₁ : f	m : r | d : m	f : r | m : f	m : : — | r	r : d | t₁ : f	m : r | d : m	f : r | m : f	m : : — | r

DELABORE, *(Continued).*

s : f	r' : f	f : m	d' m	m : r	l : s	f : —	m :
Peace,	that	fruit	of	par -	don'd	sin !	
Peace,	the	comes	from	God	a -	lone.	
t_1 : —	t_1 : —	d : —	d —	d : t_1	f : m	r : —	d :
m : f	fe : s	t : l	s : f	m : d'	d' : t	t : —	d' :
Peace	that	fruit	of	par -	don'd	sin.	
Peace	that	comes	from	God	a	alone.	
d : r	re : m	r : f	m : r	d : m	m : r	r : —	d :

The strikingly effective piece which follows, adapted from Handel's "Dead March" in his oratorio of "Saul," and reprinted from the work above named, will exhibit to the pupil the effects of transition in a still more striking manner. [The key-note E, is in the lowest space, except in the bass. There it is in the fourth line from the bottom.] Boyce's Chant illustrates both transitions.

SAUL. 8, 7; 8, 7; 7, 7. TROCHAIC. (′·) M. 50.

When we pass through yonder river. Hark! ten thousand harps and voices.

Verse 1 *What is life! 'Tis but a va-pour; Soon it van-ish - es a - way:*

Contralto.

Tenor.

2 See that glo - ry; how resplendent! Brighter far than fan - cy paints:

3 Joy - ful crowds, his throne surrounding, Sing with rap - ture of his love;

4 *Go, and share his peo-ple's glo - ry;* 'Midst the ransomed crowd ap-pear:

1 *Life is like a dy - ing ta - per: O my soul, why wish to stay?*

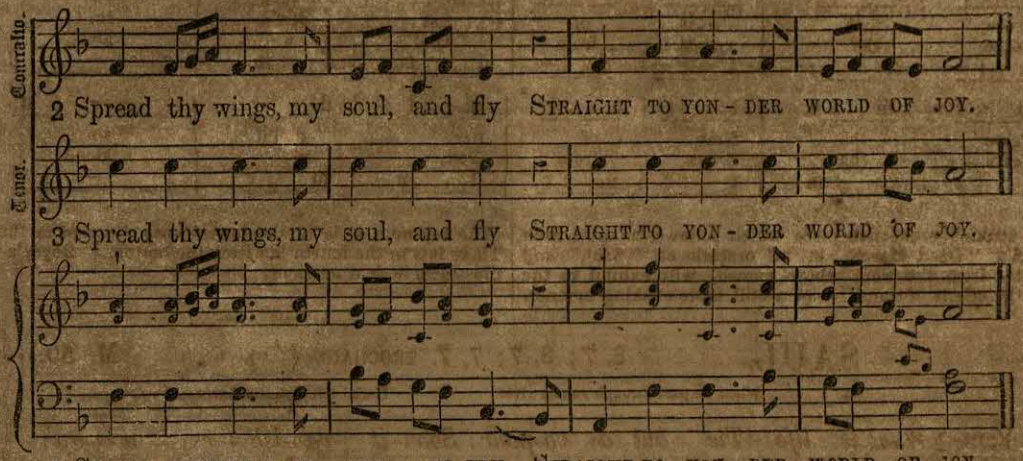
2 THERE, IN MA - JES - TY TRANSCENDENT, JE - SUS REIGNS, THE KING OF SAINTS.

3 THROUGH THE HEAV'NS HIS PRAISES SOUNDING, FILL-ING ALL THE COURTS A - BOVE.

4 THINE A JOY - FUL, WONDROUS STO - RY, One that an - gels love to hear.

SAUL, *(Continued).*

Verse 1 Why not spread thy wings and fly STRAIGHT TO YON DER WORLD OF JOY?



2 Spread thy wings, my soul, and fly STRAIGHT TO YON - DER WORLD OF JOY.

3 Spread thy wings, my soul, and fly STRAIGHT TO YON - DER WORLD OF JOY.

4 SPREAD THY WINGS, MY SOUL, AND FLY STRAIGHT TO YON - DER WORLD OF JOY.

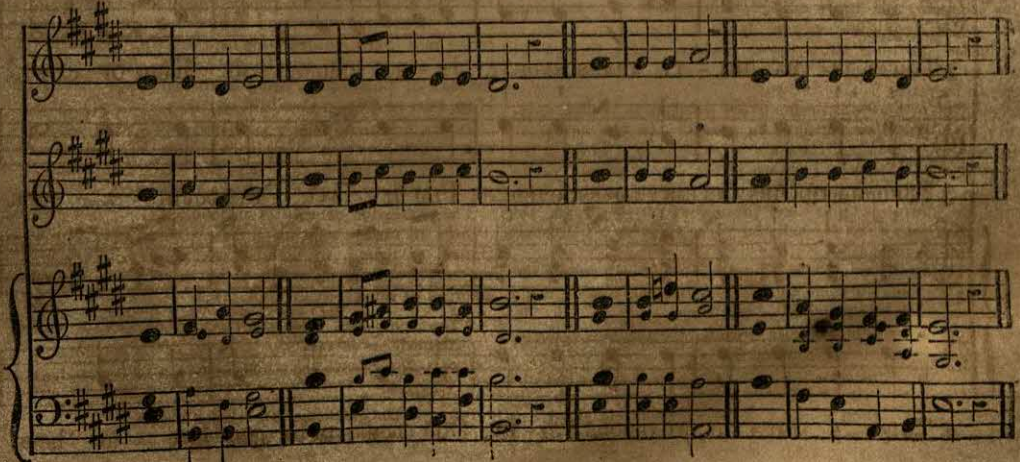
KEY F. (Music from Handel; words by Kelly.) M. 50.

m : m | m : -.m	m.r,m : f.m | r : r	f : f.s,l | f : -.l		
What is life? 'Tis	*but a va - pour,*	soon it van - ish		
d : d | d : -.d	d.t₁,d : r.d | t₁ : t₁	r : r | r : -.f		
s.f : m.r,f | m :	s : s | s : -.l	ta : -.l | s : s		
es a - way.	Life is like a	dy - ing ta - per,		
m.r : d.t₁ | d :	m : m | m : -.f	s : -.f | m : m		
s.f : f.m | m.r : -.s	s.f,m : f.m | r : —	m : m.f.s | m : -.m		
O my soul, why	wish to stay?	WHY NOT SPREAD THY		
m.r : r.d | d.t₁ : -.m	m.r,d : t₁.d | s₁ : —	d : d.r,m | d : -.d		
r.d : f.m | r :	s : d' | s : -.s	f.m : r | d : —		
WINGS AND FLY,	STRAIGHT TO YON - DER	WORLD OF JOY?		
t₁.d : r.d | t₁ :	m : m | m : -.d	t₁.d : s₁.t₁ | d : —		

BOYCE'S CHANT.

M. 66.

PSALMS li. cxxxix. ISAIAH lxiii. 1—7, 9—16. ROM. xi. 33—36.
1 COR. xv. 51—58. 1 THES. iv. 13, 18.



LESSONS IN ENGLISH.—No. LIII.

By JOHN R. BEARD, D.D.

PRONOUNS.—SIMPLE PRONOUNS.

By its derivation a pronoun (pro, *for*, and noun, Latin, *nomen*) is a *for-noun*, that is a word used in place of a noun. This description may be accepted in a general way, yet will it scarcely bear a close investigation. In "I love," *I* is said to be a pronoun, but in place of what noun does *I* stand? In the statement *my shoes are worn out*, *my* is said to be a pronoun; give me the noun whose place it holds. If *I* is a *for-noun*, for *what* noun is it? Clearly the definition is not satisfactory.

Pronouns have been designated *personal nouns*. The definition is not without reason. *I*, for instance, is a noun, for it is the name of a being. It is more than a noun, for it has specific reference to a *person*, and that person, the *first person*, consequently *I* may be termed *a personal noun*. The connexion of pronouns with persons is implied in the denomination of *I*, *thou*, *he*, &c., as personal pronouns.

Pronouns are not found in the earliest stages of language. Society must have made considerable progress ere the minuter relations indicated by pronouns would receive appropriate terms. What is called *the reflective pronouns*, viz., *self*, *himself*, &c., seems to have been the latest in origin. This is exemplified in the case of the language of children. Before a child can say *I want my hat*, he has learned to say *John wants John's hat*, the repetition of the noun performing the office of the noun and the possessive pronoun.

If we regard pronouns in their origin, we may divide them into two great classes—*the primitive* and *the derivative*, thus *I* is a primitive pronoun, and *my*, which comes from *me*, is a derivative pronoun. If we regard pronouns in their import, we obtain, 1. *Personal pronouns*, or such as more specifically mark the person, as *I*, *thou*, *he*; 2. *Possessive pronouns*, or such as besides marking the person, signify possession, as, *my* and *mine*. If we regard pronouns in their office, we find some to be, 1. *Relative*, that is having a specific reference to some preceding object, as *who*; 2. *Interrogative*, that is such as are employed in asking questions, e. g. *who?* *which?* and *what?* 3. *Demonstrative*, or those which demonstrate, that is, show or point out a person or thing, as *this*, and *that*. Other pronouns are called—1. *Reflective*, such as *self*, *oneself*, *themselves*, because they reflect or turn back, refer, that is, to the subject of the sentence. These, however, may also be termed *compound*, inasmuch as they consist of two pronouns; e. g., *themselves* consists of *them* and *selves*. Others again are called—5. *Indefinite*, such as *some*, *any*, *whosoever*, seeing that their import is vague and undetermined. We have already seen how closely related the pronoun is to the noun; the pronoun may also claim kindred with the adjective. In the phrase *my book*, *my* qualifies *book*, and accordingly *my* is a qualifier, or adjective. But *my* carries the thought to what is called the *first person*, namely *I*. It is in consequence a pronoun; *my*, then, is both a *pronoun* and an *adjective*. Hence arises the compound designation of *adjective pronoun* or *pronominal adjective*. If the adjective element predominates, as in *my*, the word may fitly be termed an "adjective pronoun." If the pronominal element prevails, as in *some*, the more suitable designation is *pronominal adjective*. How near the pronoun stands to the noun, is seen in this word *some*; as *some* think, *some* declare, where though the word *men* or *persons* may be understood, yet is it by no means necessary to the sense.

The *primitive* or *personal* pronouns are inflected in *person*, *number* and *case*. They are inflected *in person*. In the nature of things as well as in grammar there are three persons. There is the *first* person, or the speaker, *I*; there is the *second* person, or the person spoken to, *thou*; there is the *third* person, or the person spoken of, *he*. More persons than these there cannot be, for the speaker, the *person spoken to*, and the *person spoken of*, exhaust all possible modes of address.

These three persons are in the singular number, denoting one individual. They may become *plural*; they become plural thus, *I* passes into *we*, *thou* into *you*, and *he* into *they*.

These six forms as thus given are *subjects*. Corresponding forms denote *objects*; thus:—

	Singular.			*Plural.*		
Persons	1	2	3	1	2	3
SUBJECTS:	I	thou	he	we	ye or you	they
OBJECTS:	me	thee	him	us	you	them

Here we have an instance of genuine case, namely, a change of form corresponding with a change of signification. *I*, therefore, may be termed the nominative case and *me* the objective case; and so on. Only one of the personal pronouns is inflected in gender in the singular number, namely, *he*, masculine, *she*, feminine, *it*, neuter, the plural *they* is the same in the masculine, feminine and neuter.

We have already learned that the possessive *my* comes from the personal pronoun *me* (I); *my* and its corresponding forms are used before nouns, e. g. *my* hat, *thy* shoe, *his* stick, *our* house, *your* garden, *their* aunt.

Instead of my, *mine* is used if the pronoun stands without a noun; e. g. whose pencil is this? Answer, *mine*.

The *relative* pronoun *who* is also inflected in case; thus, nominative *who*, possessive *whose*, objective *whom*. In the same manner is the interrogative declined or inflected, as *who? whose? whom?*

With these explanations the reader will advantageously study this tabular view, in which are put together the chief facts connected with *personal* and *possessive* pronouns; also *relative* and *interrogative* pronouns:—

SIMPLE PRONOUNS.

		Primitive or Personal. *Subjects.* (*Nom. Case.*)	*Objects.* (*Obj. Case.*)	*Derivative or Possessive.* *With nouns.*	*Without nouns.*
PERSON 1	*Singular*	I	me	my	mine
	Plural	we	us	our	ours
PERSON 2	*Singular*	thou	thee	thy	thine
	Plural	ye	you	your	yours
PERSON 3 *Sin.*	Mas.	he	him	his	his
	Fem.	she	her	her	hers
	Neut.	it	it	its	its
Plul.		they	them	their	theirs
RELATIVE AND INTERROGAT.	Persons	who	whom	whose	whose
	Things	which			
		what			
DEMONSTRAT.	*Singular*	this			
		that			
	Plural	these			
		those			

On the pronouns contained in this table we offer a few additional remarks.

Thou is properly the pronoun of the second person singular. It is now, however, in common use, superseded by *you*, except in an emphatic personal address, in prayer and supplication made to the Divine Being.

The second person plural of the personal pronoun was formerly *ye* in the nominative and *you* in the objective case. *Ye* is now almost obsolete in ordinary conversation, and *you* is employed for both the *subject* and the *object*.

That *mine* was the original form of which *my* is a contraction, may be inferred from the fact that *mine* still stands before a noun beginning with a vowel, as,

"*Mine* eyes have seen thy salvation."

Mine, however, is in modern writing scarcely so used. *Mine* and *thine* are still common when they stand alone, the forms being retained probably from a regard to euphony, as *my* and *thy* would sound weak as terminating syllables. *Our* and *your* had of old forms in *n* (ourn, yourn) corresponding with mine and thine. Ourn became our, and this was lengthened into ours, the *s*, probably as the sign of possession, being borrowed from the Saxon genitive. If so, ours and yours should be written our's and your's.

In *his*, originally neuter as well as masculine, you find *s* the sign of the possessive case; also in *its*, which with *hers* should probably be written *it's* and *her's*. *It* in the Saxon is *hit*, and *hit* (from *he*) was common in English down to a late period.

The possessive of *who* is probably *who's*, now written *whose*. *Whose* is rarely used of things, instead of *whose* as applied to things, *of which*, or *whereof* is employed. Instances, however, are not wanting, either in prose or in verse, in which *whose* is referred to things; e. g.

"The mutes are those consonants *whose* sounds cannot be protracted."—*Murray*.

"Philosophy, *whose* end is to instruct us in the knowledge of nature."—*Campbell*.

"The question *whose* solution I require
Is, what the sex of women most desire."—*Dryden*.

"——— Past and future are the wings
On *whose* support, harmoniously conjoin'd,
Moves the great spirit of human knowledge."—*Wordsworth.*

Which is in truth only another form of *who*, and at the time when king James's translation of the Bible was made, *which* was used of *persons* as well as *things*. *Which* is still used of persons in such interrogations as "which of you will attend the lady?" Instead of *who* and *which*, *that* is often used as a relative, though properly *that* is a demonstrative. The two kinds of pronouns are, however, intimately connected together, inasmuch as *who* defines and *that* demonstrates; e. g.

RELATIVE; the man *who* loved is loved.
DEMONSTRATIVE; the man? *what* man? *that* man.

In the following sentence *that* is still a demonstrative, yet is it so employed as to show how the relative use of it grew out of the demonstrative.

"The word which I say, *that* shalt thou do."—(Numb. xxii. 20.)

Which is the same as,

"Thou shalt do the word *that* I say."

Another form of the relative *who* and *which* is *what*. *What* is used in asking questions, e. g. "*What* did you say?" "I said *that* you are ill;" you thus see that *what* corresponds to *that*; in other words, *that* is explanatory of *what*. In this case *that* has also a relative force, as may be seen in the fact that in Latin, the *that*, in such a phrase would be the relative *quod* and in French the relative *que*.

What, in some phrases, comprehends both the relative and the antecedent, being equivalent to *that which*, e. g.

This is *what* I wanted.

Where *what* is at once in apposition with the subject *this* and the object to the verb *wanted*, a curious union of relations, forming what may be termed a *subject-object*; e. g.

"He knows *what's what*; and *that's* as high
As metaphysic wit can fly."—*Hudibras.*

LESSONS IN FRENCH.—No. LXIV.

By Professor LOUIS FASQUELLE, LL.D.

LIST OF IRREGULAR VERBS, &c. (*continued from page* 179).

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
DÉTEINDRE, 4 *to discolour*	déteignant déteint, *f.* e.	je déteins	je déteignais	je déteignis	je déteindrai	je déteindrais	déteins	je déteigne	je déteignisse
DÉTENIR, 2. *to detain*	détenant détenu, *f.* e.	*see* TEINDRE je détiens *see* TENIR	je détenais	je détins	je détiendrai	je détiendrais	détiens	je détienne	je détinsse
DÉTRUIRE, 4. *to destroy*	détruisant détruit, *f.* e.	je détruis *see* CONDUIRE	je détruisais	je détruisis	je détruirai	je détruirais	détruis	je détruise	je détruisisse
DEVENIR, 2. *to become*	devenant devenu, *f.* e.	je deviens *see* TENIR	je devenais	je devins	je deviendrai	je deviendrais	deviens	je devienne	je devinsse
DÉVÊTIR, 2. *to divest*	dévêtant dévêtu, *f.* e.	je dévêts *see* VÊTIR	je dévêtais	je dévêtis	je dévêtirai	je dévêtirais	dévêts	je dévête	je dévêtisse
DIRE, 4. *to say* aux. avoir irregular	disant dit, *f.* e.	je dis tu dis il dit n. disons v. dites ils disent	je disais tu disais il disait n. disions v. disiez ils disaient	je dis tu dis il dit n. dîmes v. dîtes ils dirent	je dirai tu diras il dira n. dirons v. direz ils diront	je dirais tu dirais il dirait n. dirions v. diriez ils diraient	dis q. dise disons dites q. disent	je dise tu dises il dise n. disions v. disiez ils disent	je disse tu disses il dît n. dissions v. dissiez ils dissent
DISCOURIR, 2. *to discourse*	discourant discouru	je discours *see* COURIR	je discourais	je discourus	je discourrai	je discourrais	discours	je discoure	je discourusse
DISPARAÎTRE, 4. *to disappear*	disparaissant disparu, *f.* e.	je disparais *see* CONNAÎTRE	je disparais- [sais	je disparus	je disparaîtrai	je disparaî- [trais	disparais	je disparaisse	je disparusse
DISSOUDRE, 4. *to dissolve*	dissolvant dissous, *f.* te.	je dissous *see* ABSOUDRE	je dissolvais		je dissoudrai	je dissoudrais	dissous	je dissolve	
DISTRAIRE, 4. *to divert*	distrayant distrait, *f.* e.	je distrais *see* TRAIRE	je distrayais		je distrairai	je distrairais	distrais	je distraie	
DORMIR, 2. *to sleep* aux. avoir irregular.	dormant dormi	je dors tu dors il dort n. dormons v. dormez ils dorment	je dormais tu dormais il dormait n. dormions v. dormiez ils dormaient	je dormis tu dormis il dormit n. dormîmes v. dormîtes ils dormirent	je dormirai tu dormiras il dormira n. dormirons v. dormirez ils dormiront	je dormirais tu dormirais il dormirait n. dormirions v. dormiriez ils dormiraient	dors qu'il dorme dormons dormez q. dorment	je dorme tu dormes il dorme n. dormions v. dormiez ils dorment	je dormisse tu dormisses il dormît n. dormissions v. dormissiez ils dormissent
ÉCHOIR, 3. *to fall due*	échéant échu, *f.* e.	il échoit *or* il échet	il échoit	il échut	il écherra	il écherrait			qu'il échût
ÉCLORE, 4. *to hatch*	éclos	il éclot			il éclora	il éclorait		q. éclose	
ÉCONDUIRE, 4. *to refuse*	éconduisant éconduit, *f.* e.	j'éconduis *see* CONDUIRE	j'éconduisais	j'éconduisis	j'éconduirai	j'éconduirais	éconduis	j'éconduise	j'éconduisisse
ÉCRIRE, 4. *to write* aux. avoir irregular.	écrivant écrit, *f.* e.	j'écris tu écris il écrit n. écrivons v. écrivez ils écrivent	j'écrivais tu écrivais il écrivait n. écrivions v. écriviez ils écrivaient	j'écrivis tu écrivis il écrivit n. écrivîmes v. écrivîtes ils écrivirent	j'écrirai tu écriras il écrira n. écrirons v. écrirez ils écriront	j'écrirais tu écrirais il écrirait n. écririons v. écririez ils écriraient	écris q. écrive écrivons écrivez q. écrivent	j'écrive tu écrives il écrive n. écrivions v. écriviez ils écrivent	j'écrivisse tu écrivisses il écrivît n. écrivissions v. écrivissiez ils écrivissent
ELIRE, 4. *to elect*	élisant élu, *f.* e.	j'élis *see* LIRE	j'élisais	j'élus	j'élirai	j'élirais	élis	j'élise	j'élusse
EMETTRE, 4 *to emit*	émettant émis, *f.* e.	j'émets *see* METTRE	j'émettais	j'émis	j'émettrai	j'émettrais	émets	j'émette	j'émisse
EMMENER, 1. *to take away*	emmenant emmené, *f.* e.	j'emmène § 49, (6)	j'emmenais *see* MENER	j'emmenai	j'emmènerai	j'emmènerais	emmène	j'emmène	j'emmenasse
EMOUDRE, 4. *to sharpen*	émoulant émoulu, *f.* e.	j'émouds *see* MOUDRE	j'émoulais	j'émoulus	j'émoudrai	j'émoudrais	émouds	j'émoule	j'émoulusse
EMOUVOIR, 3 *to excite, &c.*	émouvant ému, *f.* e.	j'émeus *see* MOUVOIR	j'émouvais	j'émus	j'émouvrai	j'émouvrais	émeus	j'émeuve	j'émusse
EMPLOYER, 1. *to employ*	employant employé, *f.* e.	j'emploie § 49, (2)	j'employais *see* APPUYER	j'employai	j'emploierai	j'emploierais	emploie	j'emploie	j'employasse

List of Irregular Verbs, &c., continued.

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
EMPREINDRE, 4. *to imprint*	empreignant	j'empreins	j'empreignais	j'empreignis	j'empreindrai	j'empreindrais	empreins	j'empreigne	j'empreignisse
	empreint, *f.* e.	*see* CEINDRE							
ENCLORE, 4 *to enclose*		j'enclos			j'enclorai	j'enclorais			
	enclos, *f.* e.								
ENCOURIR, 2. *to incur*	encourant	j'encours	j'encourais	j'encourus	j'encourrai	j'encourrais	encours	j'encoure	j'encourusse
	encouru, *f.* e.	*see* COURIR							
ENDORMIR, 2. *to lull asleep*	endormant	j'endors	j'endormais	j'endormis	j'endormirai	j'endormirais	endors	j'endorme	j'endormisse
	endormi, *f.* e.	*see* DORMIR							
ENDUIRE, 4. *to plaster*	enduisant	j'enduis	j'enduisais	j'enduisis	j'enduirai	j'enduirais	enduis	j'enduise	j'enduisisse
	enduit, *f.* e.	*see* CONDUIRE							
ENFREINDRE, 4. *to infringe*	enfreignant	j'enfreins	j'enfreignais	j'enfreignis	j'enfreindrai	j'enfreindrais	enfreins	j'enfreigne	j'enfreignisse
	enfreint, *f.* e.	*see* CEINDRE							
ENFUIR, (s') 2. *to run away*	s'enfuyant	je m'enfuis	j. m'enfuyais	je m'enfuis	je m'enfuirai	je m'enfuirais	enfuis-toi	je m'enfuie	je m'enfuisse
	enfui, *f.* e.	*see* FUIR							
ENJOINDRE, 4. *to enjoin*	enjoignant	j'enjoins	j'enjoignais	j'enjoignis	j'enjoindrai	j'enjoindrais	enjoins	j'enjoigne	j'enjoignisse
	enjoint, *f.* e.	*see* CEINDRE							
ENNUYER, (s') 1. *to be weary*	s'ennuyant	je m'ennuie	je m'ennuyais	je m'ennuyai	je m'ennuierai	je m'ennuierais	ennuie-toi	je m'ennuie	je m'ennuyasse
	ennuyé, *f.* e.	*see* APPUYER	§ 49, (2)						
ENQUÉRIR, (s') 2. *to inquire*	s'enquérant	j. m'enquiers	j. m'enquérais	je m'enquis	je m'enquerrai	je m'enquerrais	enquiers-toi	je m'enquière	je m'enquisse
	enquis, *f.* e.	*see* ACQUÉRIR							
ENTREMETTRE, (s') 4. *to interpose*	s'entremettant	j. m'entremets	je m'entremettais	je m'entremis	je m'entremettrai	je m'entremettrais	entremets-toi	je m'entremette	je m'entremisse
	entremis, *f.* e.	*see* METTRE							
ENTREPRENDRE, 4. *to undertake*	entreprenant	j'entreprends	j'entreprenais	j'entrepris	j'entreprendrai	j'entreprendrais	entreprends	j'entreprenne	j'entreprisse
	entrepris, *f.* e.	*see* PRENDRE							
ENTRETENIR, 2. *to entertain*	entretenant	j'entretiens	j'entretenais	j'entretins	j'entretiendrai	j'entretiendrais	entretiens	j'entretienne	j'entretinsse
	entretenu, *f.* e	*see* TENIR.							
ENTREVOIR, 3. *to glimpse at*	entrevoyant	j'entrevois	j'entrevoyais	j'entrevis	j'entreverrai	j'entreverrais	entrevois	j'entrevoie	j'entrevisse
	entrevu, *f.* e.	*see* VOIR							
ENVOYER, 1. *to send* aux avoir irregular.	envoyant	j'envoie	j'envoyais	j'envoyai	j'enverrai	j'enverrais	envoie	j'envoie	j'envoyasse
	envoyé, *f.* e.	tu envoies	tu envoyais	tu envoyas	tu enverras	tu enverrais	q. envoie	tu envoies	tu envoyasses
		il envoie	il envoyait	il envoya	il enverra	il enverrait	envoyons	il envoie	il envoyât
		n. envoyons	n. envoyions	n. envoyâmes	n. enverrons	n.enverrions	envoyez	n. envoyions	n. envoyassions
		v. envoyez	v. envoyiez	v. envoyâtes	v. enverrez	v. enverriez	q. envoient	v. envoyiez	v. envoyassiez
		ils envoient	ils envoyaient	ils envoyèrent	ils enverront	ils enverraient		ils envoient	i. envoyassent
EPRENDRE, (s') 4. *to be smitten*	s'éprenant	je m'éprends	je m'éprenais	je m'épris	je m'éprendrai	je m'éprendrais	éprends-toi	je m'éprenne	je m'éprisse
	épris, *f.* e.	*see* PRENDRE							
ESSAYER, 1. *to try*	essayant	j'essaie	j'essayais	j'essayai	j'essaierai	j'essaierais	essaie	j'essaie	j'essayasse
	essayé, *f.* e.	*see* APPUYER	§ 49, (2)						
ETEINDRE, 4. *to extinguish*	éteignant	j'éteins	j'éteignais	j'éteignis	j'éteindrai	j'éteindrais	éteins	j'éteigne	j'éteignisse
	éteint, *f.* e.	*see* CEINDRE							
ETINCELER, 1. *to sparkle*	étincelant	j'étincelle	j'étincelais	j'étincelai	j'étincellerai	j'étincellerais	étincelle	j'étincelle	j'étincelasse
	étincelé, *f.* e.	*see* APPELER	§ 49, (4)						
ETIQUETER, 1, *to label*	étiquetant	j'étiquète	j'étiquetais	j'étiquetai	j'étiquèterai	j'étiquèterais	étiquète	j'étiquète	j'etiquetasse
	étiqueté, *f.* e.	*see* ACHETER § 47, (5)	§ 49, (5)						
ETRE, 4. *to be model*	*see*								
ETREINDRE, 4. *to press*	étreignant	j'étreins	j'étreignais	j'étreignis	j'étreindrai	j'étreindrais	étreins	j'étreigne	j'étreignisse
	étreint, *f.* e.	*see* CEINDRE							
EXCLURE, 4. *to exclude*	excluant	j'exclus	j'excluais	j'exclus	j'exclurai	j'exclurais	exclus	j'exclue	j'exclusse
	exclu, exclus	*see* CONCLURE							
EXTRAIRE, 4. *to extract*	extrayant	j'extrais	j'extrayais		j'extrairai	j'extrairais	extrais	j'extraie	
	extrait, *f.* e.	*see* TRAIRE							

FABLES.

LE CHENE ET LE SYCOMORE.

UN chêne était planté près d'un sycomore. Le dernier poussa dès [§ 78, S. 10. 3.] feuilles dès le commencement du printemps, et méprisa l'insensibilité du [S. 3. 1.] premier. Voisin, dit (*dire, ir.*) le chêne, ne compte pas trop sur les caresses de chaque zéphyr inconstant. Le froid peut (*pouvoir, 3. ir.*) revenir. Pour moi, je ne suis (*être, 4. ir.*) pas pressé de pousser des feuilles; j'attends que la chaleur soit (*être*) constante. Il avait raison: [S. 6. 1.] une gelée détruisit (*détruire, 4. ir.*) les beautés naissantes [S. 11.] du sycomore. Eh bien! dit l'autre, n'avais-je pas raison de ne me pas presser?

Ne comptez ni sur [§ 77, (1) (2.)] les caresses ni sur les protestations excessives; [S. 11. 5.] elles sont ordinairement de courte durée.—*Perrin.*

L'ANE ET SON MAITRE.

Un âne trouva par hasard une peau de lion, [S. 3. 3.] et s'en [§ 39, (17.)] revêtit, (*revêtir, 2. ir.*) Ainsi déguisé il alla dans les forêt et répandit partout la [S. 6. 2.] terreur et la consternation. Tous les animaux fuyaient (*fuir, 2. ir.*) devant lui. Enfin il rencontra son maître qu'il voulut épouvanter aussi; mais le bon homme apercevant quelque chose de [S. N. 3.] long, aux deux côtés de la tête de l'animal, lui dit: maître baudet, quoique vous soyez [S. 72. 4.] vêtu comme un lion, vos oreilles vous trahissent et montrent que vous n'êtes réellement qu'un âne.

Un sot a toujours un endroit qui le découvre et le rend ridicule. L'affectation est un juste sujet de mépris.—*Perrin.*

L'AIGLE ET LE HIBOU.

L'aigle et le hibou, après avoir [S. 20. 2.] fait longtemps la guerre, convinrent d'une paix; les articles préliminaires avaient été préalablement signés par des [S. 10. 3.] ambassadeurs: l'article le plus essential était que le premier ne mangerait pas les petits de l'autre.—Les connaissez (*connaître, 4. ir*) vous, demanda le hibou?—Non, répondit l'aigle.—Tant pis.—Peignez, (*peindre, 4. ir.*) les moi [S. 27. 4.] ou me les montrez; [§ 100, (6)] foi d'honnête aigle je n'y [§ 39, (18.)] toucherai jamais.—Mes petits, répondit l'oiseau nocturne, sont mignons, beaux, bien faits; ils ont la voix douce et mélodieuse [S. 11. 5.]; vous les reconnaîtrez aisément à ces marques.—Très bien, je ne l'oublierai pas. Il arriva un jour que l'aigle aperçut dans le coin d'un rocher de [S. 6. 4] petits monstres très laids, rechignés, avec un air triste et lugubre. Ces enfants, dit-il, n'appartiennent (*appartenir, 2. ir.*) pas à notre ami; mangeons les: aussitôt il se mit à en [S. 13. 7.] faire un bon repas. L'aigle n'avait pas tort [S. 6. 1.] Le hibou lui avait fait une fausse peinture de ses petits; ils n'en avaient pas le moindre trait.

Les parents devraient (*devoir, 3. ir.*) éviter avec soin ce faible envers leurs enfants, il les rend souvent aveugles sur leurs défauts.—*Perrin.*

LESSONS IN GEOLOGY.—No. XXXIV.

By Thos. W. Jenkyn, D.D., F.R.G.S., F.G.S. &c.

CHAPTER III.

ON THE INFLUENCE OF ATMOSPHERIC AGENCY ON THE EARTH'S CRUST.

SECTION III.

ON THE EFFECTS OF ELECTRIC DISCHARGES UPON ROCKS.

The first chapters in the series of these lessons have taught you that there are electric, magnetic, and galvanic influences, operating in and upon the crust of the globe, totally independent of the electricity, which is now to be considered among atmospheric agents. What share the operations of this subtle and powerful force may have in the production of earthquakes, and in the formation of ores and metallic veins, does not concern the business of this section, which is limited to Atmospheric Electricity.

Meteorologists have not succeeded in establishing any sound theory that accounts for the tension of atmospheric electricity in a clear and serene sky. Its origin in the regions of the air has been ascribed to various sources, such as the evaporation of impure fluids impregnated with earths and certain salts,—the luxuriant growth of plants and trees,—the unequal distribution of heat and cold in various elevations of the atmosphere,—the chemical decompositions which are constantly taking place on the earth's surface, and the permanent supply of negative electricity with which the superficial crust of the globe is charged.

No approach can be made to a satisfactory account of the tension of this subtle power in the atmosphere, without taking into the calculation a great variety of facts and many delicate processes. In estimating it, the meteorologist has to consider the relations which the evaporation ascending from the earth bears to the electric charge, the shape of the clouds in different parts of the day, and at different seasons of the year, the influence of cold and warm zones of the earth on incumbent strata of air, the physical condition of low plains, and extensive table lands, and the periodical character and frequency of thunder-storms.

The influence of electric discharges on the earth's crust must necessarily be confined to the geographical limits of thunder-storms. In the torrid zone, thunder-storms take place at certain seasons of the year, almost every day, in the course of four or five hours after the sun has reached the meridian. To this general rule, the tropical coast of Peru furnishes a striking contrast; for in that district, thunder and lightning are utterly unknown. In high northern regions, especially between the latitudes of 70° and 75°, all navigators in those tracts report that electric explosions are exceedingly rare. Sir Charles Geiseke says, that during the six years he spent in Greenland, it thundered only once. In districts under the influence of the monsoons, the thunder-storms are tremendous at every change of those winds. Where the trade winds prevail, tempests of thunder are almost unknown, except at the extreme outskirts of their range, when electric explosions are frequent and powerful.

It is well known that the atmosphere contains a large amount of electricity, which, in various ways, acts an important part both on organic life and on inorganic elements. It is greatly concerned in the formation of clouds, rain, and similar phenomena. Some of its effects on the surface of the globe are very remarkable, such as the elevation of huge columns of sand, the production of hailstones at night, and the formation of waterspouts. The influence of this power is ever present, ever active, though subtle, and for the most part invisible. It is perpetually producing slow, quiet, changes in the surface of rocks, which escape our notice, except occasionally when the discharge of a thunder-storm arrests our attention.

When Professor James Forbes, of Edinburgh, was near the Col du Mont Cervin, in the Alps, he found that the atmosphere was very turbid, and that the surface of the mountain was covered with half melted snow, while, at the same time hail began to fall. This was on a tract of the mountain some 1,500 feet *below* the Col, but yet 9,000 feet *above* the level of the sea.

While he was walking, the Alpine pole in his hand gave forth a curious sound, which the guides explained as proceeding from a worm that was eating the interior of the wood. Professor Forbes knew that the sound proceeded from the electric fluid with which the air was then charged. As a proof of this, he reversed the stick, so that the point from which it came at first, was put uppermost. In a moment the sound issued from the other end of it. The fact was that at that high elevation, they were so near a thunder cloud as to be, all of them, highly electrified by induction. He held his hand above his head, and immediately all his fingers yielded a fizzing sound. Even all the angular and pointed stones and blocks on the mountain were hissing around them, like the points near a powerful electrical machine when highly charged. He told his guides that they were near a thunder-cloud. The words had scarcely escaped his lips, when a clap of thunder, without any lightning, verified his remark.

In this instance, and indeed, in every case, where the thunder-clouds are low, the electricity produced by induction is so powerful that it escapes from all pointed objects in the shape of a flame, but without heat. This flame is what is called St. Elmo's fire: and is frequently seen, in thunder-storms at sea, at the topmasts of ships, and at the extremities of their yard-arms. On some occasions, even hail stones, drops of rain, and flakes of snow, have appeared luminous with this electric light.

I have enumerated these facts for the sake of illustrating to you the permanent presence of electric agency in the atmosphere.

When the lightning passes from the clouds to the earth, it always follows the best conductor. The best of all conductors are metals: the next are damp and moist substances, which is the reason why men and animals are so frequently struck. If the lightning in its motion, meets with a bad conductor, it shivers it to pieces, and hurls its fragments to a considerable distance. When it strikes a tree, the electric fluid converts the sap into steam, which by its well known expansive force, bursts the tree, and shatters it to atoms. Some of the phenomena connected with the velocity of lightning are curious and unaccountable. A very powerful flash of lightning will scatter gunpowder like a cloud of coal dust in March, while a feebler one sets it all on fire.

A scientific examination of the various phenomena of electric agency has shown, that the hardest and most untractable substances in nature can be artificially dissolved, and be again reconstructed, by this subtle fluid; sometimes by slow and insensible operation, and at others with rapidity and violence. On particular occasions we are made to observe the tremendous effects of electricity, during a thunderstorm; but even these, however signal and extensive, are trifling when compared with the effects that are hourly but insensibly produced by the same agency in the superficial crust of the earth.

When electricity is developed with considerable intensity, as in the explosions of a storm, it not only effects various chemical decompositions in matters found in the air, but produces marked alterations in the surface of rocks. These alterations form the principal subject of this lesson.

The phenomena produced in surface rocks, by electric discharges, may be divided into two classes: the first, produced by the dash and the stroke of the fluid against the crags and precipices of mountains; the second, by the entrance of the fluid into the surface soil.

All who inhabit mountainous districts are familiar with the effects of a discharge from a thunder-storm, when the electric fluid shivers massive cliffs of rock into pieces, and hurls the fragments from the high crags down to the valleys below. In the rugged district of Funzie, in the island of Fetlar, one of the Shetlands, a signal instance of this destructive agency took place. An enormous rock of mica schist, which was 105 feet in length, 10 feet in breadth, and, in some places 4 feet in thickness, was in an instant torn from its place in the cliff, by a flash of lightning. The stroke of the fluid dashed this immense mass into three large fragments, and a portion of it into several small pieces. One of these fragments, twenty six feet long, ten broad, and four in thickness, was only turned over: but another, which was twenty-eight feet long, seventeen broad, and of the same thickness as the other, was hurled across a high point to the distance of full fifty yards. In the same precipice, a disturbed mass, forty feet long, was thrown and propelled in the same direction, but to a greater distance, and was plunged in the sea.

To appreciate the influence of these facts upon geological inquiry, you must consider that, when lightning from above co-operates with volcanic powers from below, and that both would combine to heap up piles of rocky fragments whether upon land or in the sea, such an accumulation, if exposed, will be very difficult to account for. This will be particularly the case where such combined agencies have been in activity, and that upon a large scale, for thousands of years. In these processes, masses from upper rocks are thrown down by lightning, and fragments from lower beds are thrown up by volcanic powers, in such a way as to cover them over, or to mingle with them in ruinous confusion.

Sometimes, at an electric discharge, the lightning, instead of shattering the rock, will only fuse the surface of it. The celebrated Saussure mentions that, on Mont Blanc, he found a rock compounded of feldspar and hornblende. The surface of the rock was every where fused and covered with blisters or bubbles; but the effects of the fusion differed as the compound element of the rock differed. On the parts that were feldspar, the bubbles were white; but they were black, on the parts that were composed of hornblende.

The phenomenon of the fusion of rocks by lightning is best seen in the surface sands. In such localities the operation of the electric fluid and the results of its explosion have been remarkably curious; for the loose sand has been found to have been cemented together by absolute fusion. It is probable that the cementing process is owing to the presence of potash in the loose sands. The depth to which such fusion by the electric discharge has extended is frequently more than ten or twelve yards.

It is likewise remarkable that the lightning in entering the soil, forms portions of the loose sand into hollow tubes. The insides of these tubes are vitrified or glazed, something like what you have seen on the outside of an over-burnt brick. These tubes are called Fulgurites. Their length is sometimes thirty feet or more. The thickness of the walls or sides of these tubes, is about one-tenth of an inch; and their circumference about two or three inches. They are very rarely found perfectly round, but generally compressed, like a withered bean-stalk, and furrowed downward in the direction of their length. In their descent, they fork and divide in several places. A curious fact, connected with the phenomena of fulgurites, and illustrative of the laws of electric discharges, is, that these fused tubes are generally found in groups, and within a small distance of each other.

The effects of lightning on loose sand or sandy soils, were first examined by Dr. Priestley. In his neighbourhood, a man, while sheltering under a tree, was killed by an electric discharge. Dr. Priestley examined the sandy soil under the tree, and dug through the sand to follow the progress of the electric fluid. He found that the lightning had fused the sand into imperfect siliceous tubes, and had melted a pebble of quartz.

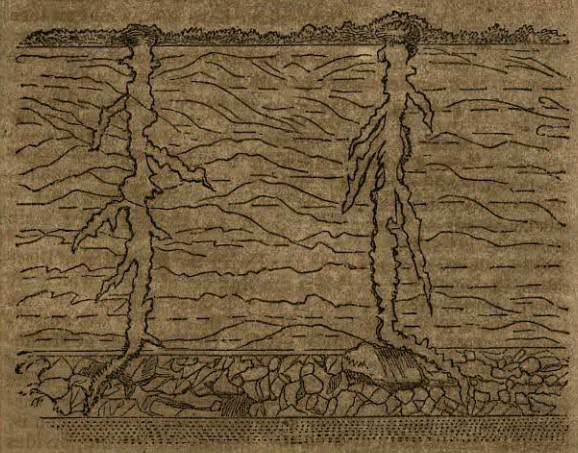
The attention of geologists was drawn to the formation of fulgurites, by some striking and tolerably perfect specimens of them, which were discovered at Drigg, in Cumberland, in the drifted sandhills which lie at the junction of the river Irt with the Irish Channel.

The sands of the hills or dunes at Drigg consist of grains of quartz, mingled with comminuted particles of hornstone, porphyry, and a few fragments of sea shells. The strata of these sand hills are as follow:—a bed of sand, thirty feet deep, which rests upon a bed of pebbles two feet deep. Both these beds rest on a stratum of wet gravel. One of these sand hillocks is altogether forty feet high. It is in this that, some years ago, three hollow tubes of fused sand, or fulgurites, about an inch and a half in diameter, were found, with their inside made vitreous by lightning.

The Drigg fulgurites descended vertically into the sandhill to more than thirty feet in depth; but in descending, the lightning formed them into several branches. At the depth of twenty-nine feet, one of the tubes came in contact with a pebble of porphyry, at which it glanced off at an angle of forty-five degrees, and then resumed its downward direction. Another struck against a pebble of granite, and glanced off in the same manner. The ruggedness or irregularity of the outline of these fulgurites, is to be accounted for by the circumstance that the lightning had to pass through moist sand.

The annexed diagram, fig. 75, represents the manner in which fulgurites are formed.

Fig. 75.



Fulgurites, showing the effects of Lightning upon Loose Sand, at Drigg, Cumberland.

These fulgurites are found in several parts of the globe. When Mr. Darwin was at Maldonado, on the plains of La Plata, in South America, he found, on the shores of the Plata, a broad band of sand-hillocks, in which he discovered a group of these siliceous and vitrified tubes, formed, like those at Drigg, by the discharge of the electric fluid. Unlike the tubes at Drigg, those in the sands of the Plata were formed with their upper extremities projecting much above the surface. The reason of such an appearance is that the surface of the sands at Maldonado, is not covered with vegetation; and consequently the sands are perpetually changing and shifting, and leaving the upper parts of these tubes exposed. The shifting of the sand had left some of these projecting tubes so defenceless that the force of the wind had broken them to pieces, and numerous fragments of fulgurites lie scattered in all directions on the hillock.

Mr. Darwin discovered that, within a small area, four sets of tubes had entered the sand perpendicularly. Unfortunately, he had no implements with which he could dig into the soil to trace the depth to which they had penetrated, but with his hands he worked off the sand till he could trace one of these tubes to the depth of two feet. He then desisted, and proceeded to collect some of the fragments of these tubes which lie scattered on the sand, but which had evidently, at one time, formed the same tube. When he added these parts to the length that he had found in the soil, he found that the tube was altogether five feet three inches long. The diameter of this tube, as far as it was traced, was nearly equal all the way down. Consequently, as it is known that the lower these tubes descend, the more they taper, we must suppose that all that was found of this tube was only the upper fragment of one, and that originally it must have extended to a far greater depth.

The inside surface of these tubes was completely vitrified, glassy and smooth. The sands of the hillocks are for the most part, if not entirely, siliceous. The thickness of the walls or sides of the tube varies from one-thirtieth to one-twentieth of an inch; but in some parts of it, it equals even one tenth of an inch. The tubes are generally compressed like those at Drigg, and have deep furrows throughout their lengths, like the cracks which are sometimes found in the bark of old trees. These differ from the tubes at Drigg by having the grains of sand on their outside rounded and slightly glazed in appearance.

The circumference of these tubes was generally about two inches. There were, however, some fragments found, lying about, that were cylindrical in structure and without furrows down their sides, which were even four inches in circumference. It is difficult to account for these longitudinal furrows in the tubes. They are probably due to the compression

which takes place, from the surrounding sand acting, while the fused tube was as yet in a soft state, under the operation of intense heat. The circumference of the fragments found uncompressed show that, in this case, the bore or the diameter of the lightning charge must have been about an inch and a quarter.

I have already mentioned some circumstances in which the tubes at Maldonado, differ from those found in Cumberland. In the Maldonado sands all the tubes enter the soil vertically; but one of these tubes has deviated from the perpendicular line to about thirty-three degrees. This tube had two small branches, one of which slanted downwards, but the other, most remarkably, glanced and pointed upwards; showing that, at this point, the electric fluid must have turned back at the acute angle of twenty-six degrees to the line of its main course downwards.

Of all the phenomena connected with the formation of these tubes, the most remarkable is the number of them which are always found grouped within very limited spaces. On the Drigg sands in Cumberland, three of these tubes were discovered within an area of fifteen yards. On the sands at Maldonado, within the space of sixty yards by twenty, there were certainly more than four. It is not likely that each separate tube is produced by distinct and successive shocks or discharges of the electric fluid. The most natural conclusion is, that the lightning, shortly before entering the ground, divides itself into as many descending sheets or branches as there are found separate tubes.

LESSONS IN LATIN.—No. LVII.

By John R. Beard, D.D.

CONJUGATIONS OF VERBS.

The student will require time and study before he can thoroughly enter into the usages observed by the Latin writers in the connexion of conjugations and verbs. The matter is the more difficult because the writers are not strictly uniform. In general, however, their practice may with due care be ascertained and imitated. The student should begin with an exact idea of the essential character of the indicative and of the subjunctive mood. The first, let him bear in mind, is the mood of fact and reality; the second is the mood of dependence and unreality; that is, the subjunctive denotes a condition, a concession, an aim, a result—something dependent on the action of a previous verb or the mind of the speaker, or the thought of some person to whom reference or allusion is made. The conjunctions do not create the dependence; they only indicate it, and show its exact nature in each case. Language is an expression of thought; and the business of the student of language should be, to see the thoughts of those who spoke the language he studies, as those thoughts arose, and as they existed in their minds.

Quod, the neuter plural of qui, signifying *that*, or *on that account*, has sometimes a merely connecting force, and sometimes gives the reason of a preceding fact or idea. As a connecting particle, it takes its verb in the indicative mood, but if the casual force is brought into relief, or if the statement is made as dependent on the word or the thought of the leading subject, the subjunctive is required. It may be well to exhibit this general doctrine in one or two particulars.

Quod, following and explaining a demonstrative pronoun, takes an indicative mood; e. g.,

Habet *hoc* optimum in se generosus animus *quod* concitatur ad honesta.
A generous mind has in it this, that it is excited to honourable things.

Quod, in English, must be sometimes rendered by *the circumstance that*; *the fact that*; or *as to*, e. g.,

Quod Silius te cum Clodio loqui vult, potes id meâ voluntate facere.
As to Silius wishing thee to speak with Clodius, you may do so with my good will.

Quod, with the subjunctive, may also be construed with *as far as*, e. g.,

Tu, *quod* poteris, nos consiliis adjuvabis.
As far as you can, you will assist us with your counsels.

Quum may be used instead of quod, especially after gratias ago, gratulor, gratum facio; the verb is in the indicative; e. g.,

Gratulor tibi *quum* tantum vales apud Dolabellam.
I congratulate you that you have so much influence with Dolabella.

Ut, with a subjunctive, may also be substituted for quod after verbs of wishing and exhortation; as, volo, moneo, hortor; also after ita and idcirco; e. g.,

Te hortor *ut* orationes meas studiose *legas*.
I exhort you to read my speeches carefully.

Ut, expressive of a wish, an effect, an operation, an aim, a result, requires the subjunctive; e. g.,

Equidem *vellem ut* aliquando redires.
I indeed could wish you at length to return.

Quod and ut generally differ, thus: quod means *that*; ut means *in order that*; accordingly, quod denotes a simple fact; ut denotes a purpose, end, or issue.

Ut, with the indicative mood, signifies *as* or *when*, and is sometimes doubled, and sometimes is used as an exclamation; e. g.,

Quid dulcius quam habere quicum omnia audeas sic loqui *ut* tecum?
What more sweet than to have some one to whom you may dare to say all things as to yourself?

Ut, joined with quisque and a superlative, denotes proportion; the verb is in the indicative; e. g.,

Ut quisque est optimus, ita difficillime alios esse improbos suspicatur.
In the degree in which a person is excellent, is it difficult for him to suspect others to be bad.

Ut and non, with a subjunctive, signify "that not," "not that," "not to;" after verbs denoting expressions of the will, ne stands with the signification of ut non; e. g.,

Me obsecras *ne* obliviscar vigilare.
You beseech me not to (that I would not) forget to watch.

The same idea is expressed after verbs signifying to prohibit, forbid, deter; as, impedio, defendo, prohibeo, deterreo, obsto, per me stat (*I offer no obstacle, I permit*), &c., by means of quo minus, equivalent to eo minus; e. g.,

Nihil impedit *quo minus* id quod maxime placeat facere *possimus*.
Nothing hinders us from being able to do that which we chiefly please.

Similar in use and meaning is quin; e. g.,

Germani retineri non poterant *quin* in nostros tela *conjicerent*.
The Germans could not be held back from throwing javelins at our men.

Quum, which, implying its correlative tum, or some other word referring to time, takes an indicative when it indicates merely coincidence or succession of time, but a subjunctive when, like our *since*, it has a causal force; e. g.,

Indic.:—Scribebam (tum) *quum* frater *venit*.
I was writing when my brother came.
Subj.:—Redibunt hirundines quum ver venerit.
The swallows will return when spring comes.

In the last instance, the subjunctive intimates that the return of spring brings back the swallows,—that is, it is the cause of their coming.

Quoniam (quum and jam), with an indicative, is used to assign the condition; out of which the idea of the chief member of the sentence arises; e. g.,

Quoniam ab inimicis praeceps *agor*, incendium meum ruinâ restinguam.
Since I am driven headlong by my foes, I will extinguish my conflagration in the general ruin.

Quando and quandoquidem have the same import with some additional force; both require the indicative.

There is a point at which adverbs and conjunctions almost, if not quite, touch each other. For instance: quamdiu is commonly considered an adverb, but dum a conjunction. Yet quamdiu, "as long as," and dum, "whilst," that is, "during the time (while, in old English, signifies time) when," differ little, and both are followed by an indicative mood; e. g.,

Quamdiu: Tenuit se uno loco *quamdiu fuit* hiems.
He kept in one place as long as it was winter.
Dum: Haec *dum* Romae *geruntur*, Quintius de agro detruditur.
While these things are done at Rome, Quintius is thrust out of his estate.

Dum is connected with a subjunctive when the act is incomplete and the particle may be rendered *until*, or when dum has a causal force; e. g.,

Caesar *dum* ad flumen Varum *veniatur*, se frumentum daturum pollicetur.
Caesar promises he will supply corn until they come to the River Var.

Dum requires the subjunctive, also, when it expresses a condition, being then Englished by *provided that*; e. g.,

Oderint dum metuant.
Let them hate provided they fear (us).

Dum is strengthened by the addition of modo, thus dummodo, which, as expressive of a condition, requires, as does modo alone, the subjunctive mood.

Donec expresses negatively what dum expresses positively. Hence donec means *as long but no longer*; in this sense it takes the indicative; but the subjunctive is required when it signifies *until*, or implies an end or object sought for:—

INDIC.:—*Donec eris* felix, multos numerabis amicos.
You will number many friends as long as you are happy.

SUBJ.:—Manserе consules minitantes *donec* magistratu *abirent*.
The consuls remained threatening until they quitted their office.

If, however, the point indicated is a known and definite point, donec, in the sense of until, has the indicative; e. g.,

De Comitiis, *donec rediit* Marcellus, silentium fuit.
There was silence respecting the Comitia until Marcellus returned.

The use of the indicative or the subjunctive with conjunctive particles depends very much on the question whether a conjunction indicates something definite or something indefinite; a fact or a possibility, a reality or a conception; for the former the indicative, for the latter the subjunctive, is the proper tense. These remarks are of general application.

Let us now advert to antequam (also anteaquam), priusquam, *before that*, and postquam (posteaquam), *after that*. These conjunctions take an indicative when they are merely temporal or relate to time; a subjunctive, when they are causal or introduce a general truth; e. g.,

INDIC.:—Equidem *antequam* tuas *legi* litteras, in hominem ire cupiebam.
Before I read thy letter, I desired to go against the man.

SUBJ.:—*Ante* videmus fulgurationem *quam* sonum *audiamus*.
*We see the lightning before we hear the thunder.**

Postquam seldom occurs with the subjunctive, and only when it has a causal force.

Simulac, *as soon as*, ubi, *when*, ubi primum, *as soon as*, quum primum, *as soon as*, as well as postquam, ut and quando, are most frequently constructed with the perfect indicative, to denote an act in past time; e. g.,

Quod *is simulatque sensit*, Romam confugit.
As soon as he was aware of that, he fled to Rome.

With ubi, a subjunctive may be used if the conjunction refers to a repeated act.

The subjunctive sometimes expresses a shade of meaning which we cannot literally render into English. Thus, Quintilian sets forth the fact that Socrates was accused of corrupting the Athenian youth, in the indicative as well as the subjunctive; using the former to declare the fact that Socrates was so accused, and the latter to intimate that the ground of the accusation lay in the minds of his accusers:—

INDIC.:—Socrates accusatus est *quod corrumpebat* Juventutem.
SUBJ.:—Socrates accusatus est *quod* corrumperet Juventutem.

Si, *if*, may have an indicative or a subjunctive according to the sense intended to be conveyed; if you mean to put a reality as a supposition, si takes an indicative; in this case, the doubt is merely formal, that is, it is merely in the way in which the fact is set forth. But if the doubt is real, that is, if it falls on the act spoken of and does not respect the manner in which the act is set forth, then the subjunctive is required; e. g.,

INDIC.:—*Si* fato omnia *fiunt* nihil nos sapere facit.
If all things happen by fate, nothing makes us wise.

SUBJ.:—*Si existat* hodie Lycurgus gaudeat Spartae ruinis.
If Lycurgus were now to rise, he would rejoice in the ruins of Sparta.

* This quotation from Seneca shows that, in the time of Nero, the ancients knew that light travelled faster than sound.

The imperfect subjunctive denotes a greater distance from actuality than the present; a still greater distance is denoted by the pluperfect.

The subjunctive sometimes expresses a wish, having the force of what in Greek is called the optative mood; and is to be rendered by *O that*; *may*, or *may not*; *would*, or *would not*; *should like*, or *should not like*; e. g.,

Ego quidem tibi *non sim* auctor, *si* Pompeius Italiam *relinquat*, te quoque profugere.
I indeed should not be disposed to advise thee also to flee, if Pompey leaves Italy.

Nisi has an indicative or a subjunctive, according as the action is contemplated as a reality or a probability; from the nature of its signification, *unless*, *if not*, it is more frequently connected with a subjunctive. Contrary to analogy, the clause preceding that which nisi introduces is in the indicative mood, provided it be also in the past (perfect or pluperfect) tense; the indicative must, however, be Englished as a subjunctive.

Praeclare *vicerамus*, *nisi* Lepidus *recepisset* Antonium.
We should have gloriously conquered, if Lepidus had not received Antony.

As with conditional, so with concessive conjunctions, the subjunctive or the indicative mood is used as you wish to indicate an independent or a dependent act. Instances will be found in the exercise.

EXERCISES—LATIN-ENGLISH.

Hoc cecidit mihi peropportunum quod ad Antonium audiendum venistis; id agunt ut boni viri videantur; te illud admoneo ut quotidie meditere, resistendum esse iracundiae; tyrannos si boni oppresserunt, ut saepe fit, recreatur civitas; ut quisque morbus est difficillimus, ita medicus nobilissimus quaeritur; quae mala ut sustinuit! ut contempsit! ut pro nihilo putavit! ante senectutem curavi ut tunc bene viverem; sol efficit ut omnia floreant; te hortor ut non solum orationes meas, sed hos etiam de philosophiâ libros studiose legas; impellimur naturâ ut prodesse velimus quam plurimis; accidit perincommode quod eum nusquam vidisti; accedit quod mirifice ingeniis excellentibus delectatur; est hoc commune vitium in magnis liberisque civitatibus ut invidia gloriae comes sit; ex quo efficitur non ut voluptas non sit voluptas, sed ut voluptas non sit summum bonum; non possum facere quin quotidie ad te mittam litteras; nolite dubitare quin huic uni credatis omnia; quoniam de genere belli dixi, nunc de magnitudine pauca dicam; quandoquidem apud te nec auctoritas senatûs nec aetas mea valet; dicite, quandoquidem in molli consedimus herbâ; qui omnia recta et honesta negligunt, dummodo potentiam consequantur; aegroto dum anima est, spes esse dicitur; intermisi quoad non licuit; quoad cum civibus dimicatum est, domi quietus fuit; iratis subtrahendi sunt ii, in quos impetum facere conantur dum se ipsi colligant; omnia postposui dummodo praeceptis patris parerem; in omnibus negotiis priusquam aggrediare adhibenda est praeparatio diligens; postquam nec ab Romanis vobis ulla spes est, pacem affero ad vos; postquam mihi nihil de adventu tuo scriberetur verebar ne id ita caderet; quum primum Romam veni, nihil mihi prius faciendum putavi quam ut tibi absenti de reditu nostro gratularer; ubi exercitus instructus esset, hastati omnium primi pugnam inibant; quia natura mutari non potest, idcirco verae amicitiae sempiternae sunt; esse oportet ut vivas non vivere ut edas; nihil abest quin sim miserrimus; paullum abfuit quin Varum interficeret; rebus externis, quo minus perficiantur, possunt obsistere; si fato omnia fiunt nihil nos admonere potest ut cautiores simus; si turbidas res sapienter ferres, tranquilliora laete ferres; dies deficiet si velim paupertatis causam defendere; si semper optima tenere possemus, haud sane consilio egeremus; consilium, ratio, sententia nisi essent in senibus, non summum consilium majores nostri appellassent senatum; non veneram, nisi fata locum sedemque dedissent; numeros meminissem, si verba tenerem; optimi homines faciunt quod rectum, quod honestum est, etsi nullum consecuturum emolumentum vident; homo quod crebro videt, non miratur, etiamsi cur fiat nescit; sunt qui quod sentiunt, etsi optimum sit, tamen invidiae metu non audent dicere; in quibusdam laudandis viris, etiamsi maximi ingenii non erant, tamen laudabilis fuit industria; quanquam omnis virtus nos ad se allicit, facitque ut eos diligamus in quibus inesse videatur, tamen justitia et liberalitas id maxime efficit; quanquam excellebat Aristides abstinentiâ, tamen exsilio decem annorum multatus est; quod turpe est, quamvis occultetur, tamen honestum fieri nullo modo potest.

ENGLISH-LATIN.

I blame thee because thou dost not assist thy father; I do this

that I may (I am aiming to) appear a good son; the scholar learnt so well that he gained very great praise; how well he endured that labour; the spring causes all things to (that all things) grow green; a father is impelled by nature to do good to his children; it cannot be that thou shouldst at the same time be at home and abroad; I entreat thee not to lose courage; since we are seated, let us converse; while these things are done, go to the city, and remain until thy father comes; I shall not return home before I have seen the whole house; wise men eat to live and do not live to eat; nothing is wanting to their being (quin) most happy; so far am I from being learned that I cannot write Latin; if thou art diligent thou wilt be happy; if thou wert diligent thou wouldst be happy; if thou hadst been diligent thou wouldst have been happy.

LESSONS IN GERMAN.—No. LIV.

§ 32. Mixed declension.

(1) We have seen that an adjective, when standing *alone* before its noun, is varied according to the ancient declension; and this, because the gender, number and case of the noun being very imperfectly indicated by the form of the noun itself, the terminations of the old declension, which, in this respect, are more complete, seem necessary in order the more fully to point out these particulars: thus, gut er Mann, good man; gut e Frau, good woman; gut es, Feld, good field.

(2) When, however, as often happens, it is *itself* preceded by some restrictive word (such as der, die, das, the; dieſer, dieſe, dieſes, this, &c.), declined after the ancient form, and, therefore, by its endings, sufficiently showing the gender, number and case of the noun, the adjective passes into the less distinctive form, called the new declension: thus, dieſer gute Mann, this good man; dieſe gute Frau, this good woman; dieſes gute Feld, this good field.

(3) But there are some restrictive words which, though, in the main, inflected according to the more complete form of the ancient declension, are, in *three leading places* (nom. sing. masc. and nom. and acc. sing. neuter), entirely destitute of significant terminations. These words are,

ein, a, an,	ſein, his; its,
kein, no; none,	ihr, her; your; their,
mein, my; mine,	unſer, our,
dein, thy; thine,	euer, your.

(4) Hence it happens, that, while in every other case, the words just cited, follow the old form, and consequently require the subsequent adjective to adopt the new one, the adjective is itself made to supply the deficiency, in the three places named above, by assuming therein the terminations proper to the ancient form. In this way, is produced a sort of *mixed* declension, which, in books generally, is set down as the Third Declension. Thus, then, will stand the

Termination of the Mixed Declension.

	Singular.		*Plural.*
Masc.	*Fem.*	*Neut.*	*All Genders.*
N. er (old form).	e.	es (old form).	N. en.
G. en.	en.	en.	G. en.
D. en.	en	en.	D. en.
A. en.	e.	es (old form).	A. en.

(5) It must be added, also, that the personal pronouns, ich, I; du, thou; er, he; ſie, she; es, it; wir, we; ihr, ye or you; ſie, they; cause the adjective before which they stand, to take this mixed form of declension. Hence the following

§ 33. Rule for adjectives.

(1) When the adjective is immediately preceded and restricted by the *indefinite article*, by a *personal* or *possessive pronoun*, or by the word kein, it assumes the endings characteristic of the mixed declension:

Examples.

Singular.

Masculine.	*Feminine.*	*Neuter.*
N. ein guter Bruder, a good brother.	meine gute Schweſter, my good sister.	unſer gutes Haus, our good house.
G. eines guten Bruders, of a g. brother.	meiner guten Schweſter, of my good sister.	unſers guten Hauſes, of our good house
D. einem guten Bruder, to a g. brother	meiner guten Schweſter, to my good sister.	unſerm guten Hauſe, to our good house.
A. einen guten Bruder, a good brother.	meine gute Schweſter, my good sister.	unſer gutes Haus, our good house.

Plural.

N. die guten Brüder, the good brothers.	meine guten Schweſtern, my good sisters.	unſre guten Häuſer, our good houses.
G. der guten Brüder, of the g. brothers.	meiner guten Schweſtern, of my g. sisters.	unſrer guten Häuſer, of our g. houses.
D. den guten Brüdern, to the g. brothers.	meinen guten Schweſtern, to my g. sisters.	unſern guten Häuſern, to our g. houses.
A. die guten Brüder, the good brothers.	meine guten Schweſtern, my good sisters.	unſre guten Häuſer, our good houses.

Singular	*Plural.*
N. du gute Mutter, thou good mother.	ihr guten Mütter, you good mothers.
G. deiner guten Mutter, of thee good mother.	euer guten Mütter, of you good mothers.
D. dir guten Mutter, to thee good mother.	euch guten Müttern, to you good mothers.
A. dich gute Mutter, thee good mother	euch guten Mütter, you good mothers.

Note that after the personal pronouns, in the *genitive case*, the article must be used; as, deiner guten Mutter, of thee the good mother.

§ 34. Further observations on adjectives.

(1) When several consecutive adjectives come before and qualify the same noun, each has the same form, which according to the preceding rules, it would have, if standing alone; as, guter, rother, lauter, Wein, good, red, pure wine; die reife, ſchöne, gute Frucht, the ripe, beautiful, good fruit.

(2) But when of two adjectives which relate to the same noun, the *second* forms with the noun an expression for a single idea, which the *first* qualifies as a whole, the second adjective takes (except in the nom. sing. and in the nom. and acc. plural) the new form of declension; as, mit trocn em weiß en Sand, with dry white sand; where *white sand*, that is, sand which is white, is said also to be *dry*.

(3) When two or more adjectives terminating alike, precede and qualify the same noun, the ending of the former is occasionally omitted; such omission being marked by a hyphen; as, ein roth- (for rothes) und weiſes Geſicht, a red and white face; die ſchwarz-roth-goldene Fahne, the black red golden banner.

(4) Participles are declined after the manner of adjectives: thus, der geliebte Bruder, the beloved brother; gen. des geliebten Bruders, of the beloved brother, &c.

(5) Adjectives, in German, as in other languages, are, by ellipsis, often made to serve in place of nouns. They then begin with a capital letter, and, excepting that they retain the forms of declension peculiar to adjectives, are in all respects treated as nouns. Their gender is made apparent either by their terminations or by the presence of an article or other defi-

nitive word; as, ein Deutſcher, a German; dieſer Deutſche, this German; die Deutſche, the German woman; das Schöne, the beautiful; das Gute, the good; that is, *that which is beautiful; that which is good.* So, also, das Weiß, the white; das Grün, the green; das Roth, the red; &c.

(6) When of two adjectives preceding a noun, the first is employed as an *adverb* to qualify the second, the former is not declined: thus, ein ganzes neues Haus, an *entirely* new house: not ein ganzes neues Haus, which would mean, *an entire, new house.*

§ 35. Comparison of Adjectives.

(1) In German, as in English, the degrees of comparison are commonly expressed by means of the suffixes er and eſt: thus,

Positive.	*Comparative.*	*Superlative.*
wild, wild;	wilder, wilder;	wildeſt, wildest.
feſt, firm;	feſter, firmer;	feſteſt, firmest.
dreiſt, bold;	dreiſter, bolder;	dreiſteſt, boldest.
los, loose	loſer, looser;	loſeſt, loosest.
naß, wet;	naſſer, wetter;	naſſeſt, wettest.
raſch, quick;	raſcher, quicker;	raſcheſt, quickest.
ſtolz, proud;	ſtolzer, prouder;	ſtolzeſt, proudest.

§ 36. Euphonic Changes.

(1) When the positive does not end in d, t, ſt, s, ß, ſch, or z, the e of the superlative suffix (eſt) is omitted; as,

blank, bright;	blanker, brighter;	blankſt, brightest.
klar, clear;	klarer, clearer;	klarſt, clearest;
rein, pure;	reiner, purer;	reinſt, purest.
ſchön, fine;	ſchöner, finer;	ſchönſt, finest.

(2) When the positive ends in e, the e of the comparative and superlative suffixes (er, eſt) is dropped; as,

weiſe, wise;	weiſer, wiser;	weiſeſt, wisest.
müde, weary;	müder, more weary;	müdeſt, most weary.

(3) When the positive ends in el, en or er, the e of these terminations is commonly omitted, upon adding the comparative or superlative suffix (er or eſt); as,

edel, noble;	edler, (not edeler), nobler;	edelſt, noblest.
trocken, dry;	trockner, (not trockener) drier;	trockenſt, driest.
tapfer, brave;	tapfrer, (not tapferer), braver;	tapferſt, bravest.

(4) When the positive is a monosyllable, the vowel (if it be capable of it) commonly takes the Umlaut, in the comparative and superlative; as,

alt, old;	älter, older;	älteſt, oldest
grob, coarse;	gröber, coarser;	gröbſt, coarsest.
klug, wise;	klüger, wiser;	klügſt, wisest.

(5) Exceptions. From this last rule, however, must be excepted nearly all those adjectives containing the diphthong au as, laut (loud), lauter, lauteſt; rauh (rough), rauher, rauheſt. So, also, the following:

bunt, variegated.	knapp, tight.	ſatt, satisfied.
fade, flat.	lahm, lame.	ſchlaff, loose.
fahl, pale.	laß, weary.	ſchlank, sleander.
falb, fallow.	los, loose.	ſchroff, rugged.
flach, plain.	matt, tired.	ſtarr, stiff.
froh, glad.	nackt, naked.	ſtolz, proud.
gerade, straight.	platt, flat.	ſtraff, stiff; tight.
glatt, smooth.	plump, clumsy.	ſtumm, dumb.
hohl, hollow.	roh, raw.	ſtumpf, blunt.
hold, amiable.	rund, round.	toll, mad.
kahl, bald.	ſacht, slow.	voll, full.
karg, stingy.	ſanft, gentle.	zahm, tame.

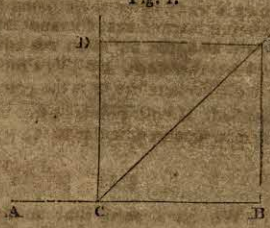
LESSONS IN GEOMETRY.—No. XX.

LECTURES ON EUCLID.

EXERCISES ON PROPOSITION XI.

I. *From the extremity of a given straight line, to draw a straight line which shall make a right angle with it.*

Fig. I.



In fig. (I) let AB be the given straight line, and B its extremity; it is required to draw from the point B, a straight line that shall make a right angle with AB.

In the straight line AB take any point C, and from it draw CD at right angles to AB, by Prop. XI. Make CD equal to CB, by Prop. III. Bisect the angle BCD by the straight line CE, according to Prop. IX. From the point D, draw DE at right angles to CD, by Prop. XI., and let it meet CE in the point E, Axiom 12, Book I. Join EB, and the straight line EB is the perpendicular required.

Because, in the two triangles CBE and CDE, the side CD is equal to the side CB, by construction, and the side CE is common to both; therefore the two sides CD and CE of the one, are equal to the two sides CD and CE of the other; but the angle DCE of the one, is also equal to the angle BCE of the other, by construction; therefore, the triangle DCE is equal to the triangle BCE; by Prop. IV.; also, the base DE is equal to the base BC, and the remaining angles of the one are equal to the remaining angles of the other each to each, viz., those to which the equal sides are opposite. Therefore, the angle CBE is equal to the angle CDE; but the angle CDE is a right angle, by construction; therefore the angle CBE is also a right angle; and it is drawn from the given extremity B as required. Q. E. F.

Scholium. In this demonstration, the 12th Axiom of the first book is legitimately employed to show that the straight line DE must meet the straight line CE, without referring to the doctrine of parallel lines. Had Euclid introduced this axiom at this point of the elements where its application is remarkably obvious, and where it is also positively required to complete the demonstration in a strictly elementary manner, it is highly probable that the endless discussions which have arisen about the 12th Axiom would have been altogether avoided, or at least would have been greatly diminished in number and importance.*

II. *In a straight line of unlimited length given in position, to find a point equally distant from two given points.*

Of this problem there are several cases:—

1°. When the two points are *in* the given straight line, or in its continuation.

2°. When the one point is in the given straight line, and the other out of it, but not situated in a perpendicular to it.

3°. When both points are out of the given straight line and are not situated in a perpendicular to it.

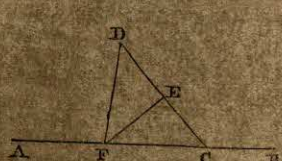
4°. When one or both points are out of the given straight line, and are both situated in a perpendicular to it.

Case 1st. If both points be situated in the given straight line, or in its continuation, to find a point in the given straight line equally distant from them.

Bisect the distance between the given points, and the straight lines between them and the point of bisection, will be the straight lines required.

Case 2nd. If the one point be in the given straight line, and the other out of it, but not situated in a perpendicular to it.

Fig. J.



In fig. (J) let AB be the straight line given in position, and C and D, the two given points, the one point C being in the given straight line, and the other point D

* It does not appear that any of our students have solved this exercise in the manner required; with the exception of an old correspondent, J. L. N. Dublin.

out of it, but not both situated in a perpendicular to it. It is required to find a point in AB equally distant from the points C and D.

Join CD, and bisect it in the point E, by the 10th Prop. From this point, draw EF at right angles to CD; then EF must meet AB on the side of CD, where it makes the least angle with AB, by Axiom 12. Let EF meet AB in F, then F is the point required. Join FD.

Because in the two triangles FEC and FED, the side CE is equal to the side ED, by construction, and the side FE is common to both; therefore the two sides CE and EF are equal to the two sides DE and EF; also, the angle CEF is equal to the angle DEF, by construction; therefore, by IV. Prop. the base FD is equal to the base FC. Wherefore, F is the point required.

Case 3rd. If both points be not in the given straight line, and not situated in a perpendicular to it.

Fig. K.

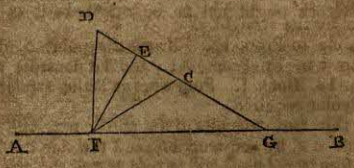
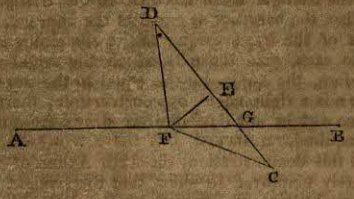


Fig. L.



In figs. (K) and (L), let AB be the straight line given in position, and C and D the two given points, not in the given straight line and not situated in a perpendicular to it. It is required to find a point in AB equally distant from the points C and D.

Join CD; if necessary, produce CD, and let it meet AB in G. Bisect CD in E, and from E draw EF at right angles to CD; then EF must meet AB on the side of DG, where it makes the least angle with AB, by Axiom 12. Let EF meet AB in F; then F is the point required. Join FD and FC.

Now, it may be proved as in the preceding case, that FD is equal to FC. Therefore, the point F is the point required. Q. E. D.

Case 4th. If both points be situated in a perpendicular to the given straight line, the problem is impossible, except in the case where both points are equally distant from the given straight line, when any point in it will answer the required condition. The reason for this can only be deduced from Prop. XXVIII. of Book I. The attempt to construct this case, however, when the points are unequally distant from the given straight line, will at once show the student its impossibility.

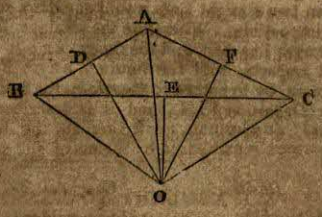
Scholium. It may perhaps be objected to the position of this exercise, immediately after Proposition XI, that the student is not in a condition, by previous knowledge, to demonstrate that the 4th case is impossible in all circumstances but one; and, no doubt, as regards strict geometrical order, this is true. But it is frequently adviseable to give the student a foretaste of the difficulties of a problem, in order to put him on his guard against imagining that, because he can solve two or three apparently easy cases of it, therefore he must necessarily know all about it, and think that he has exhausted the subject.*

III. *If the three sides of a triangle be bisected, and straight lines be drawn through the points of bisection at right angles to the sides, they shall, if produced, meet in the same point.*

In figs. (M and N), let ABC be any triangle, and let its three sides AB, BC and CA, be bisected in the points D, E and F. The straight lines drawn at right angles to the three sides, through the points D, E and F, will intersect in the same point.

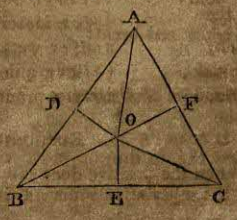
Draw DO at right angles to AB, and FO at right angles to AC, by Prop. XI. Suppose DF to be joined; then, because the angles ODF, and OFD are together less than two right angles, the straight lines DO and FO meet, by Axiom 12; let them meet in O. Join OA, OB, OC and OE.

Fig. M.



Because, in the two triangles ADO and BDO, the side AD is equal to the side DB, by hypothesis, and the side DO is common to both; therefore, the two sides AD and DO are equal to the two sides BD and DO, each to each; but the angle ADO is equal to the angle BDO, by construction; therefore the base AO is equal to the base BO. In the same manner, it may be shown that the base AO is equal to the base CO; therefore, the base BO is equal to the base CO, by Axiom 1. Because in the two triangles BEO and CEO, the side BE is equal to the side CE, and the side EO is common to both; therefore the two sides BE and EO are equal to the two sides CE and EO, each to each; but the base BO is equal to the base CO; therefore the angle BEO is equal to the angle CEO, by Prop. VIII. Whence, by Definition 10, the straight line EO is at right angles to BC, and it is drawn from the point of bisection E; therefore, if the three sides, &c. Q. E. D.*

Fig. N.



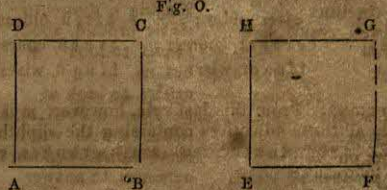
Cor. 1. The point of intersection of the three straight lines drawn from the middle of the sides of a triangle at right angles to these sides, is equally distant from the three angles.

Cor. 2. The same point of intersection, is the centre of a circle which passes through the three angular points of the triangle, the radius of this circle being the distance of this point from each of the angular points.

IV. *To describe a square upon a given straight line.*

In fig. (O) let AB be the given straight line; it is required to describe a square upon AB.

Fig. O.



At the point A draw AD at right angles to AB by Prop. XI. and make AD equal to AB. In like manner, from the point D, draw DC at right angles to DA, and make DC equal to DA. Join CB; and the four sided figure ADCD is a square, let EFGH be a square upon a straight line EF equal to the straight line AB.

For the seven straight lines AB, AD, DC, EF, EH, HG, and GF, and the six angles BAD, ADC, FEH, EHG, HGF, and GFE, are all equal to one another, by construction, and by Definition 30; and if the straight line EF be applied to the straight line AB, so that the point F shall coincide with the point B, and the straight line FE with the straight line BA, the point E shall coincide with the point A, then, FE coinciding with AB, the straight

* This problem was solved in all its cases, by Thomas Bocock, Great Warley; in three cases, by E. J. Bremner, Carlisle; in one case, by E. Russ, Islington; T. Watkins, and J. Jenkins, Pembroke-dock; D. H. Driffield; F. H. Brightwell: and others.

* This exercise was solved by C. L. Hadfield, Bolton-le-Moors; T. Bocock, Great Warley; and others.

line EH shall coincide with AD, because the angle FEH is equal to the angle BAD; and the point H shall coincide with the point D, because EH is equal to AD; again, AD coinciding with EH, the straight line HG shall coincide with DC, because the angle EHG is equal to the angle ADC; and the point G shall coincide with the point C. But the point F coincides with the point B; therefore the straight line GF shall coincide with the straight line CB; for if not, then two straight lines would enclose a space, which by Axiom 10. is impossible. Wherefore the straight line GF coincides with the straight line CB; and the figure EFGH coincides entirely, and in all respects, with the figure ABCD; but the figure EFGH is a square, by hypothesis; therefore, the figure ABCD is also a square, by Definition VIII., and it is described upon the given straight line. Q. E. F.

VOCABULARY TO LESSON I.—Page 181.

Das Rothkehlchen.

Das, *n.* the
Rothkehlchen, *n.* red-breast
roth, red
Kehle, *f.* throat
chen, *Affix. sign of diminutive*
ein, a, one
kommen, to come
der, *f. Dat.* the, to the
Strenge, *f.* severity
Winter, *m.* winter
des, *Gen. m. & n.* of the.
an, to
Fenſter, *n.* window.
eines, *Gen. m. & n.* of a, of one
Landmann, *m.* countryman
fromm, pious
als, as, when
ob, if, whether
es, it
gern, willingly, with pleasure
gern mögen, to like
kommen, *understood*
hinein, into
hin, along, towards
da, then, there
öffnen, to open
ſein, his
und, and
nehmen, to take
zutraulich, confiding
trauen, to trust
Thier, *n.* animal
freundlich, friendly
Wohnung, *f.* dwelling
wohnen, to dwell, reside, live
nun, now, well
picken, to pick
die, *pl.* the
Brosamen, *pl.* scraps
Krumme, *f.* crum
auf, up, upon, on
die, *relative pronoun pl.* which
von, of, from
Tiſch, *m.* table
fallen, to fall
auch, also
Kind, *n.* child
Vogel, *m.* bird
lein, *sing. of diminutives*
lieb halten, to love
werth halten, to esteem, cherish
halten, to hold
aber, but
der, *Nom. m.* the
Frühling, *m.* spring
wieder, again, *Prefix* re
ſich, himself, herself, itself, themselves
belauben, to cover with foliage
Laub, *n.* foliage
klein, small
Gaſt, *m.* guest
entfliegen, to fly away
ent, *Prefix* away, up, forward, un .... *English*
den, *Acc. m.* the
nahe, near
Wald, *m.* forest
bauen, to build
ſingen, to sing
fröhlich, merry
froh glad, cheerful
Lied, *n.* song, hymn
ſehen, to see, to look
kehren, to turn
abermals, again
Weibchen, *n.* Weib, mate, female, wife
mit, with
bringen, to bring
haben, to have
ſammt, together with
freuen, to enjoy, rejoice
ſehr, very, much
beide, both
wie, how, as, like
aus, out, out of
klar, clear
Auge, *n.* eye
Aeuglein, *n. diminutive*, small eye
umher, around, about
ſchauen, to look
uns, us
anſehen, to look at
an *Prep. & Pref.* at, to, by
wollen, to wish, want, be willing
etwas, something, anything
antworten, to answer
Antwort, *f.* answer
Vater, *m.* father
wenn, if, when
ſie, they, them, she, her
reden, to speak
Rede, *f.* speech
können, to be able, can
würden, would, should, *sign of the conditional mood.*
ſagen, to say
Zutrauen, *n.* confidence
erwecken, to awake
Liebe, *f.* love
lieben, to love
Gebüſch, *collective Noun* bushes, copse
ge, *a Prefix. showing a mass of things*
Buſch, *m.* bush
erzeugen, to engender, beget
gegen, *Preposition & Prefix* counter against, return.

ANSWERS TO CORRESPONDENTS.

[*Our Articles on* Mechanics *will be resumed in our next Number.*]

A Subscriber.—"Bell's System of Shorthand" is, we believe, published in a separate form, at 1s.

Une Jeune Precepteur.—Our "Lessons in Shorthand" commenced in No. 40.

W. H. W.—The list you require would take up too much space, but you will find the information in any good Encyclopædia.

B. P.—Every vowel should be sounded. ¯ is the mark for the long sound of the vowel; ´ is the acute accent; ` the grave accent; ^ is the two united.

W. H. F.—Greek ought not to be omitted—it is among the qualifications required.

W. B.—1. The questions at the end of the lessons are only intended to assist the self-instructing student. 2. We consider the plan we have adopted the best. 3. Persevere with your lessons, and remain where you are.

Doubtful.—The lines are Cowper's:—

"To him, alas! to him, I fear,
The face of death will terrible appear,
Who, in his life, flattering his senseless pride,
By being known to all the world beside,
Does not himself, when he is dying, know
Nor what he is nor whither he's to go."

L. B.—If, in the opinion of the Examiners, any candidate, of not more than twenty-three years of age, who shall have passed the Second B. A. Examination, shall possess sufficient merit, he shall receive fifty pounds per annum for the next three years, with the style of University Scholar.

An Enquirer.—£2 or £2 10*s.* per week. Like most other trades, the business is overstocked, but there is always room for thoroughly good hands.

Architect.—An average premium would be from £80 to £100, but this depends entirely on circumstances; the same may be said as to the period of service. To become an efficient architect and surveyor, requires a practical knowledge of all the details of the business, and is only to be obtained by being actually employed in an architect and surveyor's office.

John Simons: Your suggestion will meet with immediate attention.—A Youth of Eighteen: Vegetarians abstain from flesh, fish, and fowl; they take milk, butter, and cheese, and some of them admit eggs to their bill of fare; but bread, fruit, and vegetables constitute their principal diet.—James Cooney: The Pyramids were erected under the early kings of Egypt; the date of their foundation is not known with certainty; they were obviously intended as burial-places—"desolate places," which the "kings of the earth" built for themselves.—A Subscriber: Your drawing is interesting, and appears practicable. It does you much credit.—J. B.: An ingenious and simple process of annealing glass has been for some time in use by chemists. It consists in immersing the vessel in cold water, gradually heated to the boiling point, and suffered to remain till cold, when it is fit for use. Should the glass be exposed to a higher temperature than that of boiling water, it is necessary to immerse it in oil.

W. Forster furnishes the following reply to Isaac Lowthian's question, "At what time between 7 and 8 o'clock are the hour and minute hands exactly in opposition, and in the same straight line?" See Popular Educator, Vol. II., page 120. At 7 o'clock the minute hand is at 12, and the hour hand at 7 o'clock. Let x = the number of minutes the hour hand is past 7, when the minute hand gets in a line with it. The minute hand goes twelve times as fast as the hour hand, therefore, 12 x = the number of minutes the minute hand is past 12 when it gets in a line with the hour hand. The minute hand was at 12 when the hour hand was at 7, therefore the minute hand has gone over five minutes + x minutes when it gets in a line with the hour hand. But 12 x = the number of minutes the minute hand has gone over when it gets in a line with the hour hand also, therefore these two equations are equal—that is, $12x = 5 + x$, $11x = 5$, $x = \frac{5}{11}$ of a minute = the time the hour hand is past 7, when the minute hand gets in a line with it. And $\frac{5}{11} \times 12 = 5\frac{5}{11}$ = the number of minutes the minute hand is past 12 when it gets in a line with the hour hand. Therefore, the exact time between 7 and 8 o'clock when the hour and minute hands are in a straight line is $5\frac{5}{11}$ minutes past 7.

LESSONS IN NATURAL HISTORY.—No. XXII.

THE BABOON—THE MANDRILL—THE BARBARY APE—THE UNGKA APE.

THE pig-tailed baboon, sometimes called the Maimon, has a singular characteristic, in the extreme flaccidity of its flesh. Even when very young, it is sometimes found to have, on each side of the throat, hanging folds of flesh, which might be considered, in other animals, the signs of age. On growing fat, it acquires a strange and repulsive rotundity of form. The native country of these animals is India. They inhabit the forests on the banks of

GOVT PATHSHALA 1865

THE MANDRILL, OR RIBBED-FACED BABOON; AND THE BARBARY APE.

the Ganges, and encouraged by the invincible repugnance of the Hindoos to take away life, they come, with impunity, in considerable numbers, into the towns and cities, to search for more agreeable food than they can find in the woods.

A baboon, called Kees, in the possession of the celebrated traveller, Le Vaillant, was rendered serviceable to him in more ways than one. Kees drew roots from the ground by a method which was, at once, very ingenious and amusing. When he laid hold of the herbage with his teeth, he placed his fore-feet against the ground, and drew back his head, in order to pull out the root; he thus sometimes tasked his whole strength; if this did not succeed, he then laid hold of the leaves as close to the ground as possible, and threw himself heels over head; this expedient gave such a concussion to the root, that it never failed to produce the desired effect. Le Vaillant turned this trick of the baboon to his own advantage. "I made Kees," he says, "my taster. Whenever we found fruits or roots with which my Hottentots were unacquainted, we did not touch them till he had tasted them. If he threw them away, we concluded that they were either of a dis-

agreeable flavour or of a pernicious quality, and left them untasted." But Kees, like the rest of his race, was sufficiently sagacious, whenever he pleased, to make a broad distinction between *meum* and *tuum*. In proof of this, Le Vaillant says:—"I often took Kees with me when I went a hunting; and when he saw me preparing for sport, he exhibited the most lively demonstrations of joy. On the way, he would climb into the trees to look for gum, of which he was very fond. Sometimes he discovered honey, deposited in hollow trees, or in the clefts of rocks. But if he happened to have met with neither honey nor gum, and his appetite had become sharp by running about, I always witnessed a very ludicrous scene. In such cases he looked for roots, which he ate with great eagerness, especially a particular kind, which, to his cost, I also found to be very well tasted and refreshing, and therefore insisted on sharing with him. But Kees was no fool. Whenever he found such a root, and I was not near enough to seize upon my share, he devoured it in the greatest haste, keeping his eyes all the while rivetted on me. He generally measured the distance I had to pass before I could get to him, so that I was almost sure of coming up too late. Sometimes, however, when he had made a mistake in his calculation, I came upon him sooner than he expected; he then endeavoured to hide the root; in this case I compelled him, by a box on the ear, to give me up my share. But this treatment caused no malice between us; we remained as good friends as ever."

The mandrill, or ribbed-faced baboon, usually measures five feet in height, when full grown. The head is very large in proportion to the size of the body. The face, which is naked, presents a very remarkable appearance, the cheeks being of a clear violet-blue colour, with various oblique furrows, which is produced by a singular development of the bone, forming a socket for the roots of the immense canine teeth, and furrowed also obliquely. A bright vermilion line begins a little above the eyes, runs down the nose, and spreads over the lip. The eyes are small, but acute and sparkling, their irides being of a fine hazel colour. The hair on the sides of the head is long, mostly growing upwards, and terminating on the crown in an acute pointed form. The beard is long, erect, and of a yellowish hue. The whole body is covered with stiff bristle-like hairs, each of which is annulated with black and yellow. The hands are small, taper, and well made. The arms and chest are extremely muscular. The food of the mandrill, like that of the monkey tribe generally, consists of fruit, grain, and roots. It shows, however, a fondness for animal diet. One of these animals being offered a live bird, he destroyed it by a bite, and devoured it, after stripping it of its feathers. A rabbit was then given to him, which he instantly killed by a bite across the back, and he was about to devour it, when it was removed. Nor is this taste one merely of maturity. A young mandrill in one of our collections, exceedingly relished the boiled meat which was added to his vegetables. A mandrill which was exhibited in Wombwell's menagerie was fond of carrots, fruits, potatoes, and bread, and was very partial to nuts, which he cracked himself. He liked fermented liquors, and ginger-beer was one of his favourite beverages. Though well treated, he never lost his treacherous disposition. "On one occasion," says Captain Brown, "when Mr. Wombwell was showing me the consistence of the callosity of his nose, I happened to put my face too near the bars of his cage, when he forced his hands suddenly through them, and had nearly deprived me of one of my eyes."

Another specimen of the mandrill was transferred from Cross's menagerie to the Surrey Zoological Gardens. Jerry, as this animal was called, was far more domesticated than the former, and became, in fact, a great favourite. In his cage a strong arm-chair was placed; on this, when directed, he was accustomed to sit, and with great gravity and evident satisfaction, to smoke his pipe and drink his porter. All his manœuvres were performed with great slowness and composure. When his keeper lighted his pipe and presented it to him, he inspected it minutely, sometimes feeling it with his finger, as if to know whether it was lighted, before putting it in his mouth. It was then introduced, almost up to the bowl, but with that part generally downwards, and it was retained without any appearance of smoke for some minutes, during which time Jerry filled his cheek-pouches and capacious mouth, and would then exhale a volume from his mouth, nose, and sometimes even his ears, sufficient to fill his cage. He does not appear, however, to have greatly relished smoking, for a bribe of gin-and-water was generally promised before its commencement; at its close, the promise was duly fulfilled by a goblet of this liquid being handed to him, which he lost no time in discussing. He preferred for his diet cooked vegetables, with meat; and on one occasion he is said to have dined at Windsor on hashed venison, in the presence of King George or King William IV. But he was still the mandrill; his voice was harsh and guttural; and however calm he might be on any occasion, his eyes still betrayed the wild beast of the forest.

The Barbary ape is not confined to the country from whence its name is derived, but, on the contrary, is common in the forests of India, Arabia, and Africa.

Its height, when standing upright, is usually between three and four feet; the colour of the back is a greenish brown, and that of the belly pale yellow; the cheeks are provided with pouches.

These creatures subsist on vegetables and fruit, and in their manners are equally fierce and mischievous. Tavernier relates that he was travelling in India, with an English officer, when several large apes were observed on the trees around them. The officer was so much amused that he ordered his carriage to stop, and desired Tavernier to shoot one of these creatures. The attendants, who were well acquainted with the habits of these animals, begged him, however, to desist, lest the rest should do the party some injury in revenge for the death of their companion. But as the officer still urged his request, Tavernier killed a female, which fell among the branches, letting her little ones which had clung to her neck, drop on the ground. Instantly all the remaining apes, to the number of sixty or upwards, descended in great fury. As many as could, leaped on the officer's coach, where they would soon have strangled him had not the blinds been closed, and the number of attendants so great as to drive off the assailants, a task of no little difficulty. They however, continued to run after the servants for at least three miles from the place where their companion was slain.

The celebrated naturalist, Count Buffon, kept a Barbary ape for several years. In summer, it delighted to be in the open air; and even in winter it was frequently kept in a room without fire. Though it continued long in confinement, it did not become at all civilized. When food was given to it, it always filled its pouches; and when about to sleep, loved to perch on a bar of iron, or a wooden beam.

The Ungka ape is one of the animals inhabiting the deep recesses of the woods which cover so large a portion of the Indian isles. In the mildness of its temper and the gravity of its manners, it greatly resembles the orang-outan. But it is considerably smaller in size; the total length of the adult, when standing upright, being about two feet four inches.

The arms of this ape seem strangely disproportioned to its stature, their span extending four feet. Excepting the face and the palms of the hands, the animal is entirely covered with stiff hair, of a beautiful jet black. The skin beneath, as well as on the face, is of the same colour. On a flat surface this creature can manage to proceed in an erect position, but the gait is unsteady, and the hands are frequently placed on the ground to assist its advance. But, should the hands not be so engaged, the arms are raised perpendicularly above the head, with the hands depending from the wrist, as if to preserve the balance of the body, or to be ready to seize any object above and within reach. The legs are short; the feet, which are long and well-adapted for grasping, have the first and second toes closely united by a membrane as far as the last joint. The eyes are dark hazel: the ears are small; the air-sack extends beneath the skin of the throat, from the chin to the breast-bone, but when uninflated, is not manifest externally. It is distended when the animal is angry; and it then utters a hollow barking noise, which is apparently influenced by this apparatus.

Some years ago, an adult male of this species died on board the ship Sophia, during her homeward voyage. His favourite food was rice, plantains, carrots, sweetmeats, and onions. But animal food was eagerly accepted; fowls were especially preferred; and when a lizard was caught on board, and placed before the ape, he took it immediately in his paw and greedily devoured it. Spirits and wine he determinately refused, but would drink tea, coffee, and chocolate.

His temper was mild, affectionate, and generally not easily ruffled. When pleased, he would utter a chirping note; when irritated, a hollow barking noise; but when frightened or angry, loud guttural sounds of *ra, ra, ra*, were frequently repeated. So fond was he of ink, that he would drain the inkstand, and suck the

pens as often as he could; and this was the only annoyance he occasioned.

Cheerful and fond of play, he preferred children to adults, and became particularly attached to a little girl, called Elau, a native of Erromanga, one of the New Hebrides. They were often seen sitting near the capstan, the ungka with its long paws round Elau's neck, as they lovingly ate biscuit together. With this child he would romp about the deck, as if in mimic combat; now attacking, now eluding pursuit, and displaying various antics of address and agility, but without even a momentary loss of good temper.

He was desirous of forming an acquaintance with the monkeys that were on board, but they rudely repelled his advances, and showed their hostility by acts as well as chatterings. One day he seems to have determined on his revenge for more than usual insult. Swinging himself by a rope towards the nearest of his foes, and seizing his long tail, he hauled away, until the offender escaped from his clutches. Again and again he played the same trick; often did he make his way up the rigging, dragging a monkey after him, meanwhile preserving the utmost gravity of countenance. At length, however, the monkeys united in so formidable a defence, as effectually to deter him from any further aggression.

The ungka was very angry when it became necessary to restrain his liberty, but his good temper returned as soon as he was released. As if aware how awkwardly he walked, and how difficult it was to elude pursuit when on the ground, his first object, in order to escape out of reach, was to seize a rope, and to swing from his pursuer. Mounting the rigging, he would also pass from rope to rope, with astonishing quickness and agility; sometimes hanging by his hands, at others walking upright along the cords, keeping the balance true with his arms. He would also spring from one rope to another at a great distance, or drop from one aloft to another far below, seizing it in the fall, with astonishing precision. Pleased to have his own way, he could not endure disappointment. When refused anything that he coveted, he would act like a spoiled child. He would lie on the deck, throw his arms and legs in various directions, dash everything about that might be within reach, walk about, and then return to the same pranks, uttering his gutteral notes of anger and offended pride.

LESSONS IN ENGLISH.—No. LIV.

By JOHN R. BEARD, D.D.

PRONOUNS.—SIMPLE PRONOUNS.

(*Continued from page* 187.)

A relative pronoun implies an antecedent. The antecedent is the word which goes before the relative, and to which the relative refers; e. g.

"The seal is set. Now welcome, thou dread *power*,
Nameless, yet thus omnipotent, *which* here
Walkest in the shadow of the midnight hour."—*Byron.*

Power is the antecedent, and *which* the relative; the sense shows that the relative *which* has reference to the antecedent *power*.

This and *that*, demonstrative pronouns, differ thus; *this* points out the person or thing nearer to the speaker, *that* the more remote; e. g.

"Bring me *that* book." "*This* book?" "No, *that* book which stands on the farthest part of the shelf."

EXERCISE FOR PARSING.

"The prevailing idea with young people has been, the incompatibility of labour and genius; and therefore, from the fear of being accounted dull, they have thought it necessary to remain ignorant. I have seen, at school and at college, a great many young men completely destroyed by having been so unfortunate as to produce an excellent copy of verses. Their genius being now established, all that remained for them to do was, to act up to the dignity of the character; and as this dignity consisted in reading nothing new, in forgetting what they had already read, and in pretending to be acquainted with all subjects by a sort of off-hand exertion of talents, they soon collapsed into the most frivolous and insignificant of men."—*Sydney Smith.*

"I send unto mine own lord
Which of Lancaster is Henry named."—*Gower.*

"In the first and best prayer children are taught, they learn to misuse, who and which; "our father *which* art in heaven" should be "our father *who* art in heaven."—*Spectator.*

"What shall befall here afterward God wot."—*Gower.*

Charles II. greatly preferred extemporaneous preaching. On one occasion he asked the famous Stillingfleet how it was that he always read his sermons before him when he preached elsewhere without book. Stillingfleet excused himself on the ground of appearing before so great and wise a prince. "But pray," continued the divine, "will your Majesty give me leave to ask you a question? Why do you read your speeches when you can have no such reason as mine?" "Why, truly doctor," replied the king, your question is a very pertinent one, and so will be my answer. I have asked the two houses so often and for so much money, that I am ashamed to look them in the face."

"Who first seduc'd them to that revolt?
Th' infernal serpent; he it is was whose guile,
Stirr'd up with envy and revenge, deceiv'd
The mother of mankind."—*Milton.*

COMPOUND PRONOUNS—ADJECTIVE PRONOUNS.

THE pronouns of which we have just treated are simple pronouns. Of these simple pronouns others are formed, which, as consisting of more than one word, are termed *compound pronouns*.

The reflective pronoun is compound, and having for its root the old word *self* (German selbst, *same*) is inflected, thus:—

	Singular.	*Plural.*
1st PERSON.	Myself	Ourselves
2nd PERSON.	Thyself	Yourselves
3rd PERSON.	Himself	Themselves

For the sake of distinction and emphasis, the nominative of the personal pronoun may be prefixed, thus:—

	Singular.	*Plural.*
1st PERSON.	I myself	We ourselves
2nd PERSON.	Thou thyself	You yourselves
3rd PERSON.	He himself	They themselves

The use of these pronouns will be understood better from an example or two; e. g.,

I struck *myself*; I will go *myself*; *I myself* said it. He hurt *himself*; he has gone *himself*; *he himself* made the remark.

If you look into the composition of the parts of this pronoun, you will see that it is somewhat capricious. *I myself* consists of three words, *I*, the personal pronoun, first person singular; *my*, the possessive pronoun, first person singular; and *self*, an indefinite pronoun, without personal distinction. The word *he himself* is still more capricious, for here you have united the *subject*, or the nominative case *he*, with the *object* or objective case *him*. A similarly heterogeneous junction is found in the feminine *she herself*. The discordance does not occur in such phrases as

He hurt himself; she sold herself;

where *himself* and *herself*, being true reflective pronouns, referring the one to the subject *he*, the other to the subject *she*, are severally the *objects* to their verbs; but it does occur in these instances:—

He himself stole the book; *she herself* bought the gown;

where *himself* and *herself* do not perform the office of reflection or turning back, but are simply employed for emphasis; e. g.,

He charged you with stealing the book. Me? *He himself* stole the book, and he knows it.

This pronoun is often strengthened by the insertion of *own*; e. g., My *own* self, his *own* self. Observe that when *own* is thus inserted, the objective *him* becomes *his*, the possessive; so we say, not *them* ownselves, but *their* ownselves. This fact may be explained, thus: *self* is used as a noun, for we say "the love of *self* undermines excellence." *Myself* is employed in the same way; also *himself*, and *themselves*; e. g., "It is *myself*," that is, "it is the person known by such and such a name." Being a noun, *himself* has the force and the government of a noun. These attributes are latent until brought out by the insertion of *own* when *him* is changed into *his*, for we say, "he hurt *his ownself*," as well as "he took *his own hat*." It may, indeed, be doubted whether is is correct to represent *his ownself* as a pronoun at all; instead of so doing, we may regard *ownself* as a compound noun, having in agreement with it the possessive pronoun *his*.

With the aid of *self*, the word *one* forms a compound pronoun, as *one's self*. This pronoun exists exclusively in the third person singular. The *one's* is to be written with an apostrophe, it being, in fact, the possessive case of the general term *one*, governed or required to be in that case by the noun *self*, according to the rule which will be formally expounded when we come to Syntax, that *when one noun is dependent on another, the dependent noun must be in the possessive case*. The student must carefully mark the nature of this word *one*. *One*, as found in *one's self*, is not the numeral *one*. It is a con-

tracted form of the French homme, *man*; homme, in the rapidity of conversation, became first *hom* and then *on* (as on dit, *man says, one says*, that is, *they say, people say*). From *on* was formed the English *one*, which in time came to be mistaken for our name of unity. As, however, *one* (on, homme, *man*) was originally a noun, so it retains the functions of a noun, and should therefore, in combination with *self*, be written not oneself but one's self; e. g.,

"One cannot walk a furlong without hearing *one's self* abused."

Here, again, emphasis interpellates *own*; as,

"One's *own* self is apt to be only too well cared for."

The simple pronoun *who* becomes a compound, by taking into combination with itself the particle *so*, *whoso*; e. g.,

"*Whoso* toucheth their carcase shall be unclean."—Lev. xi. 27.

Instead of *so*, the particle *ever* is added, forming *whoever*. The two particles *so* and *ever* were, with *who*, fused into one word, as *whosoever*. The difference in meaning between *whoso*, *whoever*, and *whosoever*, is inconsiderable. In common usage, *whoever* is now more frequent than *whosoever*, and *whoso* is rarely employed; but *whosoever* was most common in the days of Elizabeth and James. The force of these particles is to render the definite pronoun *who* indefinite; e. g.,

"*Whosoever* he be of the children of Israel."—Lev. xx. 2.

The *who* in this compound undergoes its usual inflexions, as, *whosoever*, *whosesoever*, *whomsoever*. Care must be taken not to confound the possessive with the nominative; in the following the possessive is used:—

"*Whosesoever* sins ye remit, they are remitted."—John xx. 23.

With *ever* and *soever*, *what* enters into union, forming the indefinite pronoun *whatsoever*, which is used of things. What, as an indirect interrogative, has an adjectival construction; as,

"And the officers shall speak, saying: *What* man is there that hath built a new house?"—Deut. xx. 5;

and may, as here, be employed in connexion with persons; so we find the word resolved thus:—

"*What man soever* there be of the house of Israel."—Lev. xvii. 3;

also *whatsoever man* (Lev. xvii. 10). Hence it appears that, as applied to persons, *whosoever* is purely a pronoun, and *whatsoever* is a pronominal adjective.

With the neuter *which*, also, the particles *ever* and *soever* combine, forming *whichever* and *whichsoever*; e. g.,

You shall have *whichever* of these books you wish.

Among the compound pronouns, the pronouns which are called *reciprocal* find their proper station.

Reciprocal pronouns are those in which the action is reciprocated, that is, proceeds from the one to the other; e. g.,

They struck each other.

Each other is a reciprocal pronoun, for the action of each falls on the other. Let there be two persons concerned, A and B; then A strikes B, and B strikes A. The right pronoun to use here is *one another*. Let three or more persons be concerned, A, B, C. Here A strikes B and C, and B strikes A and C, and C strikes A and B. The proper pronoun here is *each other*. *One another* is however used, in a general way, where several persons are concerned; e. g.,

RECIPROCAL PRONOUNS.

2 PERSONS:	They love one another.
3 OR MORE PERSONS:	They love each other.
	They love one another.

LESSONS IN LATIN.—No. LIX.

By JOHN R. BEARD, D.D.

QUALIFICATION.

QUALIFICATION takes place between two words when the one modifies the acceptation without changing the form of the other. Thus if I say, scribes bene, *thou writest well*; scribis optime, *thou writest excellently*, I give two instances of qualification. Of each of these pairs of words, one is a *verb*, the other is an *adverb*. The *adverb* is the *qualifying* word, the *verb* is the *qualified* word. The adverb modifies the verb, for it shows the manner of the action of the verb. The kind of qualification depends in all cases on the import of the adverb. While the adverb modifies the meaning of the verb, it does not alter its form. In the last particular, qualification differs from government; for government modifies the form as well as the acceptation of the word or words that are under its influence. Qualification differs also from agreement in the fact that it involves no change of form in either the qualifying or the qualified word; whereas, in agreement, inflection produces changes.

Instances of qualification have been already given. The limits of this treatise leave little space for additions on the subject; which, indeed, are the less necessary because the subject is free from difficulty. Qualification, however, runs through the whole texture of the Latin, as of every other language. Its extent, as well as its nature, may be learned by the study of the ensuing table, in which the chief adverbs are arranged in classes according to their signification:—

TABULAR VIEW OF ADVERBS OR QUALIFIERS.

Interrogative.	Determinative.	Relative.	Indefinite.	General.
Ubi? *where?*	Ibi, *there* ibidem, *in the same place* hīc, *here* (where I am) istic, *there* (where thou art) illic, *there* (where he is)	ubi, *where* { *wherever* ubiubi ubicunque	alicubi, *somewhere*	ubique, *everywhere* { *where you will, everywhere.* ubivis ubilibet
Unde? *whence?*	inde, *thence* indidem, *from the same place* hinc, *hence* istinc, *thence* illinc, *thence*	unde, *whence* { *whencesoever* undeunde undecunque	alicunde, *from some quarter or other*	undique, *on every side* { *whencesoever.* undevis undelibet
Quo? *whither?*	eo, *thither*	quo, *whither*	aliquo, *somewhither, somewhere*	quovis { *whither you will.* quolibet
Quâ (viâ)? *in what way? where?*	eâ, *in that way, there* eâdem, *in the same way* hâc, *in this way* istâc, *in that way* illâc, *in that way*	quâ, *in which way? where?* { *every way* quaqua quacunque	aliquâ, *in some way, somewhere*	quâvis { *in any way you please.* qualibet
Quando? *when?*	tum, *then*	quandoquum, *when* { *whenever* quandoque quandocunque	aliquando, *at some time*	quandoque { *when you please.* quandocunque

Among qualifying words an important position is held by the adverbs which are employed in negations, affirmations, and questions.

NEGATIONS.

Negation is made in Latin by non, ne, and haud, *not*. Non denies in relation to the subject the act set forth in the verb, converting an affirmative into a negative proposition; e. g.,

AFFIRMATIVE.	Frater meus timet mortem. *My brother fears death.*
NEGATIVE.	Sapiens *non* timet mortem. *A wise man does not fear death.*

Two negatives in form produce a positive in idea, thus, non nemo, *not nobody*, is *somebody*, that is, *many a one*; nonnulli, *several*; nonnihil, *somewhat*; nonnunquam, *occasionally*; non ignoro, *I am well aware*; non nego, *I admit*.

Non modifies the word before which it is placed, and therefore non should be placed before the word which it is intended to modify. Thus very different are the meanings of these three sentences :—

1. Non possum legere.
   I cannot read.
2. Possum non legere.
   I am able to not-read.
3. Non possum non legere.
   I am unable to not-read.

Sentence 1 declares I have not power to read; 2, I may discontinue reading; and 3, I have not power to discontinue or leave off reading.

For non, nullus, in agreement with a noun, and particularly with the relative pronoun, is sometimes used in Latin; e. g.,

Misericordia, quae tibi *nulla* debetur.
Pity which is not due to thee.

Observe that the adjective nulla, in the Latin, goes with the pronoun quae. In translating, the adjective nullus may often be best rendered by an adverbial phrase, as here: *pity which is not at all, or in no way, due to thee.*

Instead of our form *and not*, the Latins employed neque or nec; e. g.,

Tullius me non convenerat *nec* erat jam quisquam mecum.
Tully had not met me and there was no one with me.

Vix, *scarcely*, may, as a softened or modest negative, hold the place of non, especially with the subjunctive perfect, a form which is employed to express the fact or idea in a gentle and courteous manner; thus, instead of barely saying non credidi, *I did not believe*, politeness suggested non crediderim, *I could not persuade myself*, or vix crediderim, *scarcely could I believe*. The present subjunctive has a similar force, but in a less decided degree.

Ne, when used by itself, is prohibitive, being employed before an imperative mood, or a subjunctive having the force of an imperative; e. g.,

Tuâ quod nihil refert *ne cures*.
Do not trouble yourself with what does not concern you.

In combination, ne is found with a general negative; e. g., nemo, that is, ne and homo; nullus, that is, ne and ullus; nihil, that is, ne hilum, *not the least*; nunquam, that is, ne and unquam.

Haud denies rather an idea or a quality than a proposition; thus, haud aequus, *not equal*, is the same as iniquus, *unequal*, or *unjust*; e. g.,

Haud mediocris vir fuit;
He was no common man;

a different statement from

Mediocris vir *non* fuit.
He was not a man of moderate ability.

Interrogative Particles.

The interrogative particles qualify either sentences or ideas.

Interrogations are made in Latin in various ways. In order to ascertain what the answer in each case should be, you must consider where the question lies, as well as the nature of the question. For instance, you may ask: Cinnane es? or, esne Cinna? *art thou Cinna?* To the first question, the answer is Cinna sum; to the second, sum Cinna; for, in the first, the question is whether thou art Cinna or Dollabella; in the second, whether thou art Cinna or not. These modifications of meaning, which in Latin are expressed by position, we in English express by emphasis, and accordingly in pronunciation we should throw the stress of the voice, in the first sentence, on the word *Cinna*, and in the second, on the word *art*. If we wished to ask whether the person before us, and not another person, was Cinna, then in Latin we should use the pronoun tu placed at the head of the sentence, and in English we should make *thou* emphatic: thus, tune es Cinna? answer, Ego; art *thou* Cinna? *I* am. I will place the three examples with their answers together.

Cinnane es?	Cinna sum.
Esne Cinna?	Sum Cinna.
Tune es Cinna?	Ego.

The negative non may become an interrogative particle, and, on the part of him who employs it, expects an answer in the negative. A man was brought before Augustus, charged with having murdered his father. The emperor, actuated by disbelief or clemency, asked him: Certe patrem tuum non occidisti? *Surely you have not killed your father?* He thus, as it were, put into the man's mouth the answer, non occidi, *I have not.* Observe, that in Latin, the important word must be repeated or given in the answer. The answer to the question now before us is in English *no!* or *I have not*; but in Latin, non occidi, the verb of the question being employed in the answer.

By studying the foregoing, you will learn that an interrogation with non is little else than a rhetorical negative.

The interrogative ne simply asks a question without in any way pre-judging the answer; as, Esne bonus? *Art thou good?* Here, it is supposed that the questioner is ignorant whether the person questioned is *good* or *not*. The ne, which is an enclitic, should be subjoined to the emphatic word. Thus, if you wanted to ask whether a *father was good*, rather than some one else, then the question would stand, paterne est bonus? If the point at issue lay in the quality *good*, then the arrangement would be, bonusne est pater? Should the words stand thus, estne pater bonus? then it would be intimated that the question referred to est, and the answer would be, *No, he* IS *not, but* WAS *good.*

Non and ne are united and form nonne. On the principle that two negatives make an affirmative, nonne expects an affirmative answer; e. g., nonne sol lucet? *does not the sun shine*; the answer is lucet, *it shines.*

Num is another interrogative adverb, and is used to draw forth an answer in agreement with the mind of the questioner. It may often be Englished by surely not; e. g., Num negare audes? *Surely you do not dare to deny?* The answer is, non audeo, *I dare not*, or non nego, *I do not deny.*

I will put down in several forms of interrogation the affirmative proposition sol lucet, together with the proper answers :—

Sol lucet.
Sol lucet? non, luna lucet.
Lucet ne sol? lucet.
Non lucet sol? certe lucet.
Nonne sol lucet? immo vero.
Num sol lucet? non nego.
An sol lucet? tu negas.

The last particle *an* requires explanation. *An* asks a question which the questioner himself denies, the object being to confirm or prove what has gone before; e. g.,

Quis neget omnes improbos esse servos?
Who can deny that all bad men are slaves?
An ille liber cui mulier imperat?
Is he free whom a woman commands?

Non, united with an, reverses the meaning; e. g., an omnis metus servitus? *Is every (kind of) fear slavery? No;* an non omnis metus servitus? *Is not every fear slavery? Yes.*

Ne is subjoined to an to strengthen the question; e. g.

Anne de nobis trahere spolia foederatis licebit, de hostibus non licebit?
Will it be lawful to spoil us your confederates and not to spoil the enemy?

An interrogative sentence may be disjunctive, involving an alternative, this or that; as, sunt haec tua verba, necne? *Are these thy words, or not?* There are several cases of the kind :—

1. In the second member there is merely a denial of the first; as, *Is ambition a virtue or not?*
2. In the second member there is a contrast; as, *Is ambition injurious or useful?*

The first member of the sentence is in these cases introduced by utrum, *whether*, num, or ne; or is wholly without an interrogative particle. The second member is, in general, preceded by an (*or*), also by ne, ne being used only when the first clause has no interrogative particle. The an may become annon, and the ne may become necne. Mark these forms :—

First Member.	*Second Member.*
num	– an (annon)
utrum (utrumne)	– an, also anne (annon)
ne	– an (annon)
ne	– ne (necne)

The forms dubito, dubium est, take an; and these, with haudscio an, nescio an, denote an inclination towards the thing mentioned in the sentence, of which they may be considered as a modest affirmation; the phrases may be rendered by *probably*; *I am inclined to think*; *it may be*; and similar forms of somewhat qualified declaration. A non may be found in the second member; e. g., Haud scio an non possis; *I conjecture that you are unable*; without the non, the words would signify *I suppose that you are able*.

Exercises.—Latin-English.

In ipsa curiâ nonnemo hostis est; auctoritate et eloquentiâ nostrâ nonnihil est profectum; populus solet nonnunquam dignos praeterire; qui mortem in malis ponit, non potest eam non timere; nihil agere animus non potest; Civitas quae nunc nulla est; nulla est amicitia quum alter verum audire non vult, alter ad mentiendum paratus est; intelligitis et animum ei praesto fuisse, nec consilium defuisse; nolite arbitrari me quum a vobis discessero, nusquam aut nullum fore; viros in dicendo excellentes vix paucos proferre possumus; rem haud sane difficilem admirari videmini; quis homo es? sum Pamphilus; unde dejectus est Cinna? ex urbe; Cujus est hic liber? meus; quâ in urbe sumus? Romae; Cujus hoc interest? nostrâ; quanti emisti domum; magno pretio; quam rem agis? argentum cudo; nemo id tibi renunciavit? nemo; id frater tibi renunciavit? id; frater id tibi renunciavit? frater; tibi frater id renunciavit? mihi; patri non placebat? patri; id non divinitus factum esse putatis? divinitus; non patria praestat omnibus officiis; immo vero; ego te videre noluerim? immo vero me a te videre nolui; haec non turpe est dubitare philosophos? turpe; meministine me in senatu dicere? memini; satisne est nobis vos metuendos esse? satis; ego ne argentum cudo? tu; nonne animadvertis? ego (animadverto) canis nonne similis lupo est? similis; num locupletiores quaeris testes? non quaero; an tibi irasci tum videmur, quum quid in causis acrius et vehementius dicimus? non mihi; voluptas meliorem efficit aut pejorem virum? tibi ego aut tu mihi servus es? quaero num frater venerit; ex me quaesierat nonne putarem eum esse malum; fatemur, acuti hebetesne simus, non esse id in nobis; illud considerandum est, num propter imbecillitatem desiderata sit amicitia, an esset pulchrior causa; consulit Alexander an totius orbis imperium fatis tibi destinaret pater; si virtus per se ponderanda est, dubito an Thrasybulum primum omnium ponam; moriendum certe est, est id incertum, an eo ipso die; cujus ego civitatis disciplinam non solum Graeciae sed haud scio an cunctis gentibus anteponendam dicam; ingens eo die res, ac nescio an maxima illo bello gesta sit; vir sapientissimus atque haud scio an praestantissimus peccatum suum confiteri maluit; tanti tibi honores habiti sunt quanti haud scio an nemini; amicitiâ haud scio an, exceptâ sapientiâ, quidquam melius homini sit a diis immortalibus datum.

A Short Dialogue.

Chremes.—Menedemus.

C. Menedeme, videris mihi nimis laborare; es jam sexaginta annos natus.
M. Cur curas quae aliena sunt? mihi sic est usus.
C. Potestne homini usus esse, ut se ipse cruciet?
M. Mihi est (lacrimat).
C. Ne lacrima, atque fac ut sciam secreta tua.
M. Cur hanc rem scire vis?
C. Hâc de causâ, ut te consolari, vel consilio et re javare possim.
M. Dicam tibi omnia.
C. At pone interea rastrum; ne labora.
M. Minime! sine me, ne qua mihi sit recreatio.
C. Non sinam; nunc loquere.
M. Filium unicum habeo: ah, quid dixi? habeo? immo habui; nunc habeam necne incertum est.
C. Quid ita?
M. Scies.

English-Latin.

Art thou Cicero? No; I am Lentulus; surely thou art Cicero? by no means; scarcely can I believe that my father is no more; he is no more; where is he? he is not nowhere; where then? he is with God; who art thou? I am John; art thou not James? no, James has gone away home; whether thou art James or John does not concern me; least of all does it concern me what thou are named; surely my father has come; I fear thy father will not come; will he come or not? I know not whether my sister will come or not; it concerns thee not whether I rejoice or do not rejoice; art thou going home or somewhere else? whence came the bird? thence; whither does the bird fly? thither; where are thou? here; where is thy brother? there; where the king is, there is the queen.

LESSONS IN FRENCH.—No. LXV.

By Professor Louis Fasquelle, LL.D.

LIST OF IRREGULAR VERBS, &c. (*continued from page* 188).

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
Faillir, 2. *to fail.*	faillissant	je faillis	je faillissais	je faillis	je faillirai	je faillirais		je faillisse	je faillisse
(New form)	failli	*now regular*	*see* finir, § 50				faillis		
(Old form,	(*Bescherelle*)								
still used)	faillant	je faux	je faillais	je faillis	je faudrai	je faudrais		je faille,	je faillisse,
Irregular.	failli	tu faux	tu faillais	tu faillis	tu faudras	tu faudrais		&c.	&c.
	(*Académie*)	il faut	il faillait	il faillit	il faudra	il faudrait			
		n. faillons	n. faillions	n. faillîmes	n. faudrons	n. faudrions			
		v. faillez	v. failliez	v. faillîtes	v. faudrez	v. faudriez			
		il faillent	ils faillaient	ils faillirent	ils faudront	ils faudraient			
Faire, 4, *to do, to make* aux. avoir irregular.	faisant	je fais	je faisais	je fis	je ferai	je ferais		je fasse	je fisse
	fait, *f.* e.	tu fais	tu faisais	tu fis	tu feras	tu ferais	fais	tu fasses	tu fisses
		il fait	il faisait	il fit	il fera	il ferait	q. fasse	il fasse	il fît
		n. faisons	n. faisions	n. fîmes	n. ferons	n. ferions	faisons	n. fassions	n. fissions
		v. faites	v. faisiez	v. fîtes	v. ferez	v. feriez	faites	v. fassiez	v. fissiez
		ils font	ils faisaient	ils firent	ils feront	ils feraient	q. fassent	ils fassent	ils fissent
Falloir, 3. *to be necessary*	fallu	il faut	il fallait	il fallut	il faudra	il faudrait		q. faille	q. fallût
		unipersonal					q. faille		
Feindre, 4. *to feign*	feignant	je feins	je feignais	je feignis	je feindrai	je feindrais		je feigne	je feignisse
	feint, *f.* e.	*see* ceindre					feins		
Ficeler, 1. *to cord*	ficelant	je ficelle	je ficelais	je ficelais	je ficellerai	je ficellerais		je ficelle	je ficelasse
	ficelé, *f.* e.	*see* appeler § 40, (4)					ficelle		
Frire, 4. *to fry* defective		je fris			je frirai	je frirais			
	frit, *f.* e.	tu fris			tu friras	tu frirais	fris		
		il frit			il frira, &c.	il frirait, &c.			
Fuir, 2. *to flee*	fuyant	je fuis	je fuyais	je fuis	je fuirai	je fuirais		je fuie	je fuisse
	fui	tu fuis	tu fuyais	tu fuis	tu fuiras	tu fuirais	fuis	tu fuies	tu fuisses
		il fuit	il fuyait	il fuit	il fuira	il fuirait	q. fuie	il fuie	il fuît
		n. fuyons	n. fuyions	n. fuîmes	n. fuirons	n. fuirions	fuyons	n. fuyions	n. fuissions
		v. fuyez	v. fuyiez	v. fuîtes	v. fuirez	v. fuiriez	fuyez	v. fuyiez	v. fuissiez
		ils fuient	ils fuyaient	ils fuirent	ils fuiront	ils fuiraient	q. fuient	ils fuient	ils fuissent

ENGLAND AND WALES.

BOUNDARIES.

NORTH: Scotland.
SOUTH: English Channel.
EAST: North Sea.
WEST: Irish Sea, &c.

COUNTIES IN ENGLAND.

(The assize or county towns are printed in small capitals.)

Counties.	*Chief Towns.*
Northumberland,	NEWCASTLE-[ON-TYNE.
Cumberland,	CARLISLE.
Durham,	Sunderland, DURHAM.
Westmoreland,	Kendal. APPLEBY.
York, North Riding,	Scarbo-[rough,
York, East Riding,	Hull,
York, West Riding,	Leeds, Sheffield, York.
Lancaster,	Manchester; Liverpool, LANCASTER.

FIVE EASTERN.

Lincoln,	LINCOLN.
Cambridge,	CAMBRIDGE.
Norfolk,	NORWICH.
Suffolk,	Ipswich.
Essex,	Colchester, CHELMSFORD.

SIX WESTERN.

Chester,	Stockport, CHESTER.
Salop,	SHREWSBURY.
Hereford,	HEREFORD.
Monmouth,	Newport, MONMOUTH.
Gloucester,	Bristol, GLOUCESTER.
Somerset,	Bath, TAUNTON.

FOURTEEN MIDLAND.

Stafford,	Wolverhampton, STAFFORD.
Derby,	DERBY.
Nottingham,	NOTTINGHAM.
Leicester,	LEICESTER.
Warwick,	Birmingham, WARWICK.
Worcester,	WORCESTER.
Oxford,	OXFORD.
Buckingham,	Aylesbury, BUCKING-[HAM.
Middlesex,	LONDON.
Hertford,	HERTFORD.
Bedford,	BEDFORD.
Huntingdon,	HUNTINGDON.
Northampton,	NORTHAMP-[TON.
Rutland,	OAKHAM.

NINE SOUTHERN.

Kent,	Chatham, MAIDSTONE.
Surrey,	Southwark. GUILDFORD.

St. George's Channel
Bristol Channel
Cardigan Bay
ENGLISH CHANNEL
Strait of Dover
FRANCE
Dover
Calais
Boulogne
Cornwall
Devon
Somerset
Dorset
Wiltshire
Hampshire
Sussex
Surrey
Kent
Essex
Suffolk
Norfolk
Cambridge
Lincoln
Rutland
Northampton
Leicester
Warwick
Worcester
Oxford
Buckingham
Hertford
Bedford
Huntingdon
Middlesex
Stafford
Derby
Nottingham
Chester
Salop
Hereford
Monmouth
Gloucester
Brecon
Radnor
Montgomery
Cardigan
Carmarthen
Glamorgan
Pembroke
Isle of Wight
Land's End
Lizard
Scilly Isles
Portland
Weymouth
Plymouth
Falmouth
Penzance
Truro
Launceston
Bodmin
Exeter
Taunton
Bridgewater
Wells
Bath
Bristol
Gloucester
Cheltenham
Worcester
Hereford
Ludlow
Shrewsbury
Oswestry
Wrexham
Chester
Stockport
Manchester
Liverpool
Lancaster
Preston
Kendal
Appleby
Carlisle
Newcastle
Durham
Sunderland
Scarborough
Hull
Leeds
Sheffield
York
Boston
Lincoln
Gainsborough
Grantham
Stamford
Peterborough
Ely
Cambridge
Bury St. Edmunds
Ipswich
Colchester
Chelmsford
Norwich
Yarmouth
Lowestoft
Aldeburgh
Harwich
Maldon
Southend
Thames
Medway
Rochester
Chatham
Maidstone
Canterbury
Ashford
Hastings
Rye
Winchelsea
Dungeness
Deal
Ramsgate
Margate
North Foreland
South Foreland
Dover
Folkestone
Romney
Brighton
Lewes
Arundel
Chichester
Portsmouth
Southampton
Winchester
Salisbury
Andover
Basingstoke
Reading
Windsor
Guildford
Kingston
Croydon
Epsom
Dorking
Horsham
Petworth
Midhurst
Godalming
Farnham
Alton
Newport
Ryde
Cowes
Yarmouth
Newbury
Oxford
Abingdon
Wallingford
Henley
Aylesbury
Buckingham
Banbury
Daventry
Northampton
Towcester
Stony Stratford
Dunstable
Hertford
Ware
Bishop's Stortford
Saffron Walden
Royston
Huntingdon
St. Ives
Ely
Wisbech
Spalding
Boston
Stamford
Oakham
Uppingham
Market Harborough
Leicester
Loughborough
Melton Mowbray
Nottingham
Newark
Retford
Worksop
Mansfield
Derby
Ashbourne
Matlock
Buxton
Chesterfield
Sheffield
Doncaster
Pontefract
Wakefield
Halifax
Bradford
Skipton
Ripon
Richmond
Northallerton
Darlington
Durham
Sunderland
Newcastle
Morpeth
Alnwick
Berwick
Hexham
Carlisle
Penrith
Appleby
Kendal
Lancaster
Preston
Wigan
Warrington
Chester
Stockport
Macclesfield
Congleton
Nantwich
Whitchurch
Wrexham
Oswestry
Shrewsbury
Ludlow
Bridgnorth
Wolverhampton
Stafford
Lichfield
Tamworth
Coventry
Warwick
Birmingham
Kidderminster
Worcester
Evesham
Tewkesbury
Gloucester
Cheltenham
Stroud
Cirencester
Malmesbury
Chippenham
Devizes
Marlborough
Swindon
Wantage
Abingdon
Oxford
Woodstock
Chipping Norton
Banbury
Brecon
Radnor
Hay
Builth
Llandovery
Llandeilo
Carmarthen
Swansea
Neath
Cardiff
Newport
Monmouth
Chepstow
Abergavenny
Brecon
Merthyr Tydvil
Pembroke
Haverfordwest
Cardigan
Aberystwith
Machynlleth
Dolgelly
Barmouth
Harlech
Bangor
Carnarvon
Beaumaris
Holyhead
Conway
Denbigh
Ruthin
Llangollen
Montgomery
Welshpool
Newtown
Llanidloes
Rhayader
Presteigne
Leominster
Ross
Monmouth
Chepstow
Usk
Caerleon
Pontypool
Abergavenny
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Merthyr Tydvil
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Denbigh
Ruthin
Llangollen
Wrexham
Flint
Mold
Holywell
Chester
Whitchurch
Nantwich
Congleton
Macclesfield
Stockport
Manchester
Bolton
Wigan
Liverpool
Ormskirk
Preston
Lancaster
Kendal
Appleby
Penrith
Carlisle
Cockermouth
Whitehaven
Workington
Keswick
Ambleside
Hawkshead
Ulverston
Dalton
Barrow
Furness
Isle of Man
Douglas
Peel
Castletown
Ramsey
Douglas
Whitehaven
Cockermouth
Keswick
Penrith
Appleby
Kendal
Lancaster
Preston
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Macclesfield
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Pontypool
Abergavenny
Brecon
Merthyr Tydvil
Builth
Llandovery
Llandeilo
Hay
Presteigne
Radnor
Rhayader
Llanidloes
Newtown
Welshpool
Montgomery
Ludlow
Leominster
Ross
Hereford
Bromyard
Tenbury
Kidderminster
Bewdley
Worcester
Evesham
Pershore
Tewkesbury
Gloucester
Cheltenham
Stroud
Cirencester
Malmesbury
Chippenham
Devizes
Marlborough
Swindon
Wantage
Abingdon
Oxford
Woodstock
Chipping Norton
Banbury
Daventry
Towcester
Northampton
Stony Stratford
Dunstable
Hertford
Ware
Bishop's Stortford
Saffron Walden
Royston
Huntingdon
St. Ives
Ely
Wisbech
Spalding
Boston
Stamford
Oakham
Uppingham
Market Harborough
Leicester
Loughborough
Melton Mowbray
Nottingham
Newark
Retford
Worksop
Mansfield
Derby
Ashbourne
Matlock
Buxton
Chesterfield
Sheffield
Doncaster
Pontefract
Wakefield
Halifax
Bradford
Skipton
Ripon
Richmond
Northallerton
Darlington
Durham
Sunderland
Newcastle
Morpeth
Alnwick
Berwick
Hexham
Carlisle
Penrith
Appleby
Kendal
Lancaster
Preston
Wigan
Warrington
Chester
Stockport
Macclesfield
Congleton
Nantwich
Whitchurch
Wrexham
Oswestry
Shrewsbury
Ludlow
Bridgnorth
Wolverhampton
Stafford
Lichfield
Tamworth
Coventry
Warwick
Birmingham
Kidderminster
Worcester
Evesham

ENGLAND AND WALES.

Counties.	*Chief Towns.*
Sussex,	Brighton, Lewes.
Berks,	Reading.
Hants,	Portsmouth, Winchester.
Wilts,	Trowbridge, Salisbury.
Dorset,	Weymouth, Dorchester.
Devon,	Plymouth, Exeter.
Cornwall,	Truro.

COUNTIES IN WALES.

Six Northern.

Anglesea,	Holyhead, Beaumaris.
Caernarvon,	Caernarvon.
Denbigh.	Wrexham. Denbigh.
Flint,	Holywell, Mold.
Merioneth,	Dolgelly.
Montgomery,	Newtown, Montgo-[mery.

Six Southern.

Cardigan,	Aberystwith, Cardigan.
Radnor,	New Radnor.
Brecknock,	Brecon.
Glamorgan,	Merthyr-[Tydvil, Cardiff.
Caermarthen,	Caermarthen.
Pembroke,	Pembroke.

ISLANDS.

Anglesea,	Beaumaris.
Holy Island,	Holyhead.
Isle of Man,	Castletown.
Isle of Wight,	Newport.
Thanet,	Ramsgate.
Sheppey,	Sheerness
Jersey,	St. Helier.
Guernsey,	St. Pierre.
Alderney,	St. Anne.

ISLETS.

Scilly Isles, S.W. of Cornwall.
Eddystone, S. of Cornwall.
Lindisfarne, E. of Berwick.
Coquet, E. of Northumberland.
Ferns, E. of Northumberland.
Foulness, E. of Essex.
Lundy Isle, British Channel.
Ramsey Isle, W. of Pembrokeshire.
Bardsey Isle, S. of Caernarvon.
Skerry Isle, N.E. of Anglesea.

List of Irregular Verbs, &c., continued.

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
GELER, 1. *to freeze*, unip	gelant gelé, *f.* e.	il gèle	il gelait	il gela	il gèlera	il gèlerait	qu'il gèle	qu'il gèle	q. gelât
GÉSIR, 2. *to lie* defective	gisant	il git n. gisons v. gisez ils gisent	je gisais tu gisais il gisait n. gisions v. gisiez ils gisaient						
GRASSEYER, 1. *to lisp*	grasseyant grasseyé	je grasseie *see* APPUYER	je grasseyais § 49, (2)	je grasseyai	je grasseierai	je grasseierais	grasseie	je grasseie	je grasseyasse
GRÊLER, 1. *to hail.* unip.	grêlant grêlé	il grêle	il grêlait	il grêla	il grêlera	il grêlerait	q. grêle	qu'il grêle	qu'il grêlât
GRÉSILLER, 1. *to sleet.* unip.	grésillant grésillé	il grésille	il grésillait	il grésilla	il grésillera	il grésillerait	q. grésille	q. grésille	q. grésillât
HAÏR, 2. *to hate* aux. avoir irregular	haïssant haï, *f.* e.	je hais tu hais il hait n. haïssons v. haïssez i. haïssent	je haïssais tu haïssais il haïssait n. haïssions v. haïssiez ils haïssaient	je haïs tu haïs il haït n. haïmes v. haïtes ils haïrent	je haïrai tu haïras il haïra n. haïrons v. haïrez ils haïront	je haïrais tu haïrais il haïrait n. haïrions v. haïriez ils haïraient	hais q. haïsse haïssons haïssez q. haïssent	je haïsse tu haïsses il haïsse n. haïssions v. haïssiez ils haïssent	je haïsse tu haïsses il haït n. haïssions v. haïssiez il haïssent
HARCELER, 1. *to torment*	harcelant harcelé, *f.* e.	je harcèle § 49, (5)	je harcelais	je harcelais	je harcèlerai	je harcèlerais	harcèle	je harcèle	je harcelasse
IMPORTER 1. *to matter* unipersonal.	important importé	il importe *it matters*	il importait	il importa	il importera	il importerait	q. importe	q. importe	q. importât
INDUIRE, 4. *to induce*	induisant induit, *f.* e.	j'induis *see* CONDUIRE	j'induisais	j'induisis	j'induirai	j'induirais	induis	j'induise	j'induisisse
INSCRIRE, 4. *to inscribe*	inscrivant inscrit, *f.* e.	j'inscris *see* ÉCRIRE	j'inscrivais	j'inscrivis	j'inscrirai	j'inscrirais	inscris	j'inscrive	j'inscrivisse
INSTRUIRE, 4. *to instruct*	instruisant instruit, *f.* e.	j'instruis *see* CONDUIRE	j'instruisais	j'instruisis	j'instruirai	j'instruirais	instruis	j'instruise	j'instruisisse
INTERDIRE, 4. *to interdict*	interdisant interdit, *f.* e.	j'interdis *see* CONTRE-[DIRE	j'interdisais	j'interdis	j'interdirai	j'interdirais	interdis	j'interdise	j'interdisse
INTERROMPRE, 4. *to interrupt*	interrompant interrompu, [*f.* e.	j'interromps *see* ROMPRE	j'interrompais	j'interrompis	j'interromprai	j'interrom-[prais	interromps	j'interrompe	j'interromp-[isee
INTERVENIR, 2. *to intervene*	intervenant intervenu, *f.* e.	j'interviens *see* TENIR	j'intervenais	j'intervins	j'interviendrai	j'intervien-[drais	interviens	j'intervienne	j'intervinsse
INTRODUIRE, 4. *to introduce*	introduisant introduit, *f.* e.	j'introduis *see* CONDUIRE	j'introduisais	j'introduisis	j'introduirai	j'introduirais	introduis	j'introduise	j'introduisisse
JETER, 1. *to throw* aux. avoir peculiar. § 49, (4.)	jetant jeté, *f.* e.	je jette tu jettes il jette n. jetons v. jetez ils jettent	je jetais tu jetais il jetait n. jetions v. jetiez ils jetaient	je jetai tu jetas il jeta n. jetâmes v. jetâtes ils jetèrent	je jetterai tu jetteras il jettera n. jetterons v. jetterez ils jetteront	je jetterais tu jetterais il jetterait n. jetterions v. jetteriez ils jetteraient	jette q. jette jetons jetez q. jettent	je jette tu jettes il jette n. jetions v. jetiez ils jettent	je jetasse tu jetasse il jetât n. jetassions v. jetassiez ils jetassent
JOINDRE, 4. *to join*	joignant joint, *f.* e.	je joins *see* CEINDRE	je joignais	je joignais	je joindrai	je joindrais	joins	je joigne	je joignisse
LIRE, 4, *to read* aux. avoir irregular.	lisant lu, *f.* e.	je lis tu lis il lit nous lisons vous lisez ils lisent	je lisais tu lisais il lisait n. lisions v. lisiez ils lisaient	je lus tu lus il lut n. lûmes v. lûtes ils lurent	je lirai tu liras il lira n. lirons v. lirez ils liront	je lirais tu lirais il lirait n. lirions v. liriez ils liraient	lis q. lise lisons lisez q. lisent	je lise tu lises il lise n. lisions v. lisiez ils lisent	je lusse tu lusses ils lût n. lussions v. lussiez ils lussent
LUIRE 4. *to shine*	luisant lui	je luis *see* CONDUIRE	je luisais		je luirai	je luirais		je luise	
MAINTENIR, 2. *to maintain*	maintenant maintenu, *f.* e.	je maintiens *see* TENIR	je maintenais	je maintins	je maintien-[drai	je maintien-[drais	maintiens	je maintienne	je maintinsse
MALFAIRE, 4. *to do wrong*	malfaisant malfait, *f.* e.	*seldom*	*used except*	*in the*	*tenses*	*given*	*here*		
MAUDIRE, 4. *to curse* aux. avoir irregular.	maudissant maudit, *f.* e.	je maudis tu maudis il maudit n. maudissions v. maudissez ils maudissent	je maudissais tu maudissais il maudissait n. maudissions v. maudissiez i. maudissaient	je maudis *like* DIRE	je maudirai *like* DIRE	je maudirais *like* DIRE	maudis q. maudisse maudissons maudissez q. maudissent	je maudisse tu maudisses il maudisse n. maudissions v. maudissiez ils maudissent	je maudisse *like* DIRE
MÉCONNAITRE, 4. *to disown*	méconnaissant méconnu, *f.* e.	je méconnais *see* CONNAÎTRE	je méconnais-[sais	je méconnus	je méconnaî-[trai	je méconnaî-[trais	méconnais	je méconnaisse	je méconnusse
MÉDIRE, 4. *to slander*	médisant médit	je médis *see* CONTRE-[DIRE	je médisais	je médis	je médirai	je médirais	médis	je médise	je médisse
MÉFAIRE, 4. *to do wrong*	méfaisant méfait	je méfais *see* FAIRE	je méfaisais	je méfis	je méferai	je méferais	méfais	je méfasse	je méfisse
MENER, 1. *to lead, take*	menant mené, *f.* e.	je mène	je menais	je menai	je mènerai	je mènerais	mène	je mène	je menasse
MENTIR, 1. *to lie*	mentant menti	je mens *see* SENTIR	je mentais	je mentis	je mentirai	je mentirais	mens	je mente	je mentisse

LESSONS IN GERMAN.—No. LV.

§ 37. DECLENSION OF COMPARATIVES AND SUPERLATIVES.

(1) Comparatives and superlatives are subject to the same laws of declension, that regulate adjectives in the positive. Thus, after adding to ſchön, *fair*, the suffix (er), we get the comparative form ſchöner, *fairer*; which is inflected in the three ways:

EXAMPLES.

a. OLD FORM.

	Singular.			*Plural.*
	Masculine.	*Feminine.*	*Neuter.*	*For all genders.*
N.	ſchöner er,	e,	es,	ſchöner e, fairer.
G.	ſchöner es (en),	er,	es (en),	ſchöner er, of fairer.
D.	ſchöner em,	er,	em,	ſchöner en, to fairer.
A.	ſchöner en,	e,	es,	ſchöner e, fairer.

b. NEW FORM.

	Masc.	*Fem.*	*Neut.*	*For all genders.*
N.	der ſchöner e,	(die) –e,	(das) –e,	die ſchöner en the fairer.
G.	des ſchöner en,	(der) –en,	(des) –en,	der ſchöner en, of the fairer.
D.	dem ſchöner en,	(der) –en,	(dem)–en,	den ſchöner en, to the fairer.
A.	den ſchöner en,	(die) –e,	(das) –e,	die ſchöner en, the fairer.

c. MIXED FORM.

	Masc. Sing.	*Fem. Sing.*	*Neut. Sing.*
N.	unſer ſchöner er,	(unſere) –e,	(unſer) –es, our fairer.
G.	unſeres ſchöner en,	(unſerer) –en,	(unſeres) –en, of our fairer.
D.	unſerem ſchöner en,	(unſerer) –en,	(unſerem)–en, to our fairer.
A.	unſeren ſchöner en,	(unſere) –e,	(unſer) –es, our fairer.

Plural for all genders.

N. unſere ſchöner en, our fairer.
G. unſerer ſchöner en, of our fairer.
D. unſeren ſchöner en, to our fairer.
A. unſere ſchöner en, our fairer.

Sometimes the e in the endings of pronouns and comparatives, is omitted, or transposed; thus instead of unſeres ſchöneren, we may say unſers ſchönern, or unſres, ſchönern.

(2) In the superlative of the *old* form, the *vocative* case only is used, a case which has not been set down in the paradigms or examples, because it is always like the nominative in form.

EXAMPLES.

a. OLD FORM.

Masculine.	*Feminine.*	*Neuter.*
V. liebſter Vater! O dearest father!	theuerſte Schweſter! O dearest sister!	ſchönſtes Kind! O most beautiful child.
Plural.	*Plural.*	*Plural.*
V. liebſte Väter! O dearest fathers!	theuerſte Schweſtern! O dearest sisters!	ſchönſte Kinder! O most beautiful children.

b. NEW FORM.

	Singular.			*Plural.*
	Masc.	*Fem.*	*Neut.*	*For all genders.*
N.	der ſchönſte,	(die) –e,	(das) –e,	die ſchönſten, the fairest.
G.	des ſchönſten,	(der) –en,	(des) –en,	der ſchönſten, of the fairest.
D.	dem ſchönſten,	(der) –en,	(dem)–en,	den ſchönſten, to the fairest.
A.	den ſchönſten,	(die) –e,	(das) –e,	die ſchönſten, the fairest.

c. MIXED FORM.

	Masc. Sing.	*Fem. Sing.*	*Neut. Sing.*
N.	unſer ſchönſter,	(unſere) –e,	(unſer) –es, our fairest.
G.	unſeres ſchönſten,	(unſerer) –en,	(unſeres) –en, of our fairest.
D.	unſerem ſchönſten,	(unſerer) –en,	(unſerem)–en, to our fairest.
A.	unſeren ſchönſten,	(unſere) –e,	(unſer) –es, our fairest.

Plural for all genders.

N. unſere ſchönſten, our fairest.
G. unſerer ſchönſten, of our fairest.
D. unſeren ſchönſten, to our fairest.
A. unſere ſchönſten, our fairest.

§ 38. OBSERVATIONS.

(1) In place of the regular form of the superlative, preceded by the article and agreeing with the noun in gender, number and case, we often find a circumlocution employed; which consists in the dative case singular of the new form preceded by the particle am: thus, die Tage ſind im Winter am kürzeſten, the days are shortest in the winter. The explanation is easy: am, compounded of an (*at*), and dem, the dative of der (*the*), signifies *at the*. Translated literally, therefore, the sentence above will be: The days in winter are *at the* shortest; that is, at the shortest (*limit*): where, in the German, kürzeſten agrees with some noun in the dative understood, which is governed by an. But the phrase is used and treated just as any regular superlative form would be under the same circumstances. In like manner, auf (*upon*) and zu (*to*) combined respectively with the article (auf das and zu dem, and producing the forms aufs and zum, are employed with adjectives in the superlative: thus, aufs ſchönſte eingerichtet, arranged upon the finest (*plan*); zum ſchönſten, to, or according to the finest (*manner*). These latter forms, however, are chiefly employed to denote *eminence*, rather than to express *comparison*. Freely rendered, therefore, aufs ſchönſte and zum ſchönſten will be: *very finely, most beautifully* or the like.

(2) Sometimes aller (*of all*) is found prefixed to superlatives to give intensity of meaning: as, der allerbeſte, the best of all, i. e. the *very* best: die allerſchönſte, the handsomest of all, i. e. the *very* handsomest.

(3) When mere *eminence*, and not *comparison*, is to be expressed, the words äußerſt (*extremely*) and höchſt (*highest*) are employed: as, dies iſt eine äußerſt ſchöne Blume, this is a very beautiful flower.

§ 39. IRREGULAR AND DEFECTIVE FORMS.

1. IRREGULAR.

Positive.	*Comparative.*	*Superlative.*
gut, good;	beſſer, better;	beſt or am beſten, best.
hoch, high;	höher, higher;	höchſt or am höchſten, highest.
nahe, near;	näher, nearer;	nächſt or am nächſten, nearest.
viel, much;	mehr, more;	meiſt or am meiſten, most.
wenig, little;	minder, less;	mindeſt or am mindeſten, least.
groß, great;	größer, greater;	größt or am größten, greatest.
bald, early;	eher, earlier;	erſt or am erſten, earliest.

2. DEFECTIVE.

The following want the positive:

äußere, outer;	äußerſt, uttermost.
inner, inner;	innerſt, innermost.
vorder, fore;	vorderſt, foremost.
hinter, hinder;	hinterſt, hindermost.
ober, upper;	oberſt, uppermost.
unter, under;	unterſt, undermost.
letzt or am letzten, latest, wants both positive and comparative.	

§ 40. OBSERVATIONS.

(1) Note that hoch (*high*), in the *comparative*, *drops*, while nah (*near*), in the *superlative*, *assumes* the letter e: thus, hoch, comp. höher; nah, comp. näher, sup. nächſt.

(2) That mehr (*more*), the comparative of viel, has two forms in the plural, mehr e or mehr ere; and that the latter (mehrere) is the more common one. It has the use and meaning of the English word *several*: as, Ich ſah mehrere Soldaten, I saw several soldiers.

(3) That the superlative of groß (*great*) is contracted into größt.

(4) That erſt, the superlative of eher (*earlier*), is a contraction for eheſt.

(5) That from der erſte (*the earliest or first*) and der letzte (*the latest or last*), are formed the correlative terms erſterer, *the former*, and letzterer, *the latter*.

(6) That the words in the preceding list of defectives are formed from adverbs, and are comparatives in *form* rather than in *fact*.

§ 41. ADJECTIVES COMPARED BY MEANS OF ADVERBS.

(1) When the degrees of comparison are not expressed by suffixes, the adverbs mehr (*more*) and am meiſten (*most*) are employed for that purpose: thus,

Positive.	*Comparative.*	*Superlative.*
angſt, *anxious;*	mehr angſt, *more anxious;*	am meiſten angſt, *most anxious.*
bereit, *ready;*	mehr bereit, *more ready;*	am meiſten bereit, *most ready.*
eingedenk, *mindful;*	mehr eingedenk, *more mindful;*	am meiſten eingedenk, *most mindful.*
feind, *hostile;*	mehr feind, *more hostile;*	am meiſten feind, *most hostile.*
gram, *averse;*	mehr gram, *more averse;*	am meiſten gram, *most averse.*
irre, *astray;*	mehr irre, *more astray;*	am meiſten irre, *most astray.*
kund, *public;*	mehr kund, *more public;*	am meiſten kund, *most public.*
leid, *sorry;*	mehr leid, *more sorry;*	am meiſten leid, *most sorry.*
nutz, *useful;*	mehr nutz, *more useful;*	am meiſten nutz, *most useful.*

§ 42. OBSERVATIONS.

The above method of comparison, which is commonly called the *compound form*, is chiefly used in cases:

(1) Where a comparison is instituted between two different qualities of the same person or thing: as: er iſt mehr luſtig als traurig, he is more merry than sad; er war mehr glücklich als tapfer, he was more fortunate than brave.

(2) Where the adjectives, like those in the list above, are never used otherwise than as predicates.

(3) Where the addition of the suffixes of comparison would offend against *euphony*, as in the superlative of adjectives ending in iſch; thus barbariſch, barbarous.

LESSONS IN GERMAN PRONUNCIATION.—No. II.

2

Die kleine Wohlthäterin.

Dee kli'-nai vole'-tai-tai-rin.

Es war ein kalter ſtrenger Winter. Da ſammelte
Ess vâhr ine kâl'-ter streng'-er vin'-ter. Dâh zâm'-mel-tai
die kleine Minna, die einzige Tochter wohlthätiger Ael-
dee kli'-nai min'-nâ, dee ine'-tsig-ai toch'-ter vole'-tai-tig-er el'-
tern, die Krümchen und Broſamen, die übrig blieben
tern, dee krüm'-chen öönt bro'-zâ-men, dee ü'-brich blee'-ben
und bewahrete ſie. Dann ging ſie hinaus zweimal
öönt bai-vâh'-rai-tai zee. Dân ghink zee hin-ouss' tswi'mâhl
am Tage auf den Hof und ſtreuete die Krümchen hin,
âm tâh'-gai ouf dain ho'f öönt stroi'-tai dee krüm'-chen hin,
und die Vöglein flogen herbei und pickten ſie auf. Dem
öönt dee fö'ch'-line flo'-gen herr-bi' öönt pick'-ten zee ouf. Dem
Mädchen aber zitterten die Hände vor Froſt in der
mait'-chen âh'ber tsit'-ter-ten dee hen'-dai fore frost in dair
bittern Kälte. Da belauſchten ſie die Aeltern und
bit'-tern kel'-tai. Dâh bai-loush'-ten zee dee el'-tern öönt
freuten ſich des lieblichen Anblicks und ſprachen:
froi'-ten zich dess leep'-lich-chen ân'-blicks öönt spräh'-chen:
Warum thuſt du das, Minna?
Vâ'-röom too'st doo dâss, min'-nâh?

Es iſt ja Alles mit Schnee und Eis bedeckt, antwor-
Ess ist yâh âl'-less mit shney öönt ice bai-deckt', ânt'-vor-
tete Minna, daß die Thierchen nichts finden können;
tai-tai min'-nâh, dâss dee teer'-chen nichts fin'-den kön'-nen;
nun ſind ſie arm, darum füttere ich ſie, ſo wie die reichen
noon zint zee ârm, dâh'-röom füt'-trai ich zee zo vee dee ri'-chen
Menſchen die armen unterſtützen und ernähren.
men'-shen dee âr'-men öön'-ter-stüt"sen öönt err-nai'-ren.

Da ſagte der Vater; Aber du kannſt ſie doch nicht
Dâh zâhch'-tai dair fâk'-ter: âh'-ber doo kânst zee döch nicht
alle verſorgen!
âl'-lai ferr-zorg'-en!

Die kleine Minna antwortete: Thun denn nicht alle
Dee kli'-nai min'-nâh ânt'-vor-tai-tai: Toon den nicht âl'-lai
Kinder in der ganzen Welt wie ich, ſo wie ja auch alle
kin'-der in dair gant'-sen velt vee ich, zo vee yâh ouch âl'-lai
reichen Leute die armen verpflegen? Der Vater
ri'-chen loi'-tai dee âr'-men ferr-pflai'-ghen? Dair fâh'-ter
aber blickte die Mutter des Mägdleins an und
âh'-ber blick'-tai dee mööt'-ter dess maicht'-lines ân öönt
ſagte: o du heilige Einfalt!
zâhch'-tai: o doo hi'-lig-ai ine'-fâlt!

VOCABULARY.

Die kleine Wohlthäterin.

Wohlthäterin, *f.* benefactress
Wohl, *n.* good, *adverb.* well, perhaps
That, *f.* deed
Thäter, *m.* doer, actor
in, inn, *Affix, to form feminine nouns.*
thätig, doing, active
ſein, to be
war, was
kalt, cold
ſammeln, to gather
einzig, only
Tochter, *f.* daughter
Aeltern, Eltern, parents, *pl.*
übrig, over
bleiben, to remain, stay
bewahren, to preserve, keep
dann, then
gehen, to go
hinaus, out
zwei, two
Mal, *n.* time
Tag, *m.* day
Hof, *m.* yard, court, farm
ſtreuen, to strew
herbei, up
her, here, hither, *indicates motion towards the speaker.*
dem, *Dative m. & n.* to the
Mädchen, *n* girl, maid
zittern, to tremble
vor, with, before
Kälte, *f.* cold
belauſchen, to watch, listen
be, *Prefix.* be *in besmear, gives greater activity to the verb*
lieblich, lovely
lich, *Affirmative,* ly, ous, able, like
Anblick, *m.* sight
Blick, *m.* look
anblicken, to look at
ſprechen, to speak
warum, wherefore
um, for, about
thun, to do
du, thou
das, *demonstrative pronoun* that
iſt, is
ja, indeed, yes
es iſt ja? is it not?
Schnee, *m.* snow
Eis, *n.* ice
bedecken, to cover
daß, *conjunction.* that
nichts, nothing
arm, poor
darum, therefore
dar, *instead of* da, there
ich, I
füttern, to feed
ſo, so
reich, rich
Menſch, *m.* man human being
unterſtützen, to assist
unter, under
Stütze, *f.* prop
ernähren, feed, support
doch, yet, however
nicht, not
verſorgen, to supply, provide
ſorgen, to care
ver, *Prefix.* for, before, away, astray
denn, then, for
ganz, whole
Welt, *f.* world
Leute, *pl.* people
verpflegen, pflegen, to support, to nurse
Mutter, *f.* mother
heilig, holy
Magd, *f.* servant, maid
Einfalt, *f.* simplicity

LESSONS IN BOOKKEEPING.—No. II.

INTRODUCTION.

In our first lesson, we made some general observations tending to explain the difference between Single and Double Entry; and giving some notion of the books which are necessary to be kept in a Merchant or Tradesman's counting-house. In order more fully to explain the nature of Bookkeeping by Double Entry, however, we must now give some general explanations and rules.

1. When a Customer buys goods of a Merchant on *trust* or *credit*, He becomes the *Debtor* and the Merchant becomes the *Creditor*. The *quantity* and the *value* of the goods *bought* by the customer, or *sold* by the merchant, are then entered in the Merchant's books to the Customer's *debit*, that is, on the *Dr. side* of the customer's account; and the *quantity* and *value* of the same goods are also entered in the Merchant's books to the Merchant's *credit*, that is, on the *Cr.* side of the Merchant's Account of the Goods. Let us illustrate this rule by an example:—January 15th, 1863, Robert Brown, a customer of mine, bought of me, a Cotton Merchant, or I sold to him, on credit, 10 bags of cotton, containing 3,000 lbs. at 8d. per lb., value £100. Here, Robert Brown becomes my *Debtor*, and I become his *Creditor*. I must therefore enter his name and an account of this transaction in my books, in the following manner:—

January 15th, 1863.

Robert Brown Dr. to Cotton

For 10 bags, wt. 3,000 lbs. at 8d. per lb..... £100 0 0

In a proper set of Books, kept by Double Entry, such an entry as this would appear *first* in the *Day-Book*, or some substitute for it; *secondly*, in the *Journal* or Month-Book, or Sub-Ledger; and *lastly* in the *Ledger* itself.

In the Journal, the form of the entry would be altered for the purpose of admitting references to the Ledger, and sometimes of combining similar entries together before posting them into the Ledger. If no combination took place, the entry or the preceding transaction in the Journal would be as follows:—

(*Page* 2.)

Date.	Fol.	January, 1863.	Dr. £.	Dr. s.	Dr. d.	Cr. £.	Cr. s.	Cr. d.
15	3	Robert Brown, *Dr.*	100	0	0			
	7	To Cotton				100	0	0

In this entry, which exhibits the most improved form of a Journal, there are *five* columns or spaces enclosed by parallel lines: 1°. For the Date; 2°. For the Folio of the Ledger; 3°. For the names of the Dr. and Cr.; 4°. For the sum due by the Dr.; 5°. For the sum due by the Cr. The use of these five columns will be more fully explained by-and-by.

In the Ledger, the form of the same entry would be again altered for the purpose of showing more distinctly the nature of the transaction; and it would be entered *twice* in a different form, because for every *Debtor* there is a *Creditor*, and of course for every *Debit* there is a *Credit*. A *Debit* means an entry in the Ledger where a sum is placed to the *Dr. side* of a customer's account, showing that it is due by him, or that he owes that sum to the Merchant. The corresponding *Credit* is an entry in the Ledger, where the same sum is placed to the *Cr. side* of the Merchant's account of the goods, showing that it is due to him, or that the Customer owes him that sum. The following are the forms of *both* Entries in the *Ledger*, relating to the same Transaction:—

(*Folio* 3.) (*Folio* 3.)

Dr.		ROBERT BROWN.				*Cr.*				
1863.				£.	s.	d.				
Feby.	15	To Cotton	2	100	„	„				

(*Folio* 7.) (*Folio* 7.)

Dr.						COTTON ACCOUNT.				*Cr.*			
				£.	s.	d.	1863.			£.	s.	d.
							Jany.	15	By Robert Brown... ...	2	100	„	„

In the first of these entries, the entry reads thus: *Robert Brown Dr. To Cotton;* and in the second, *Cotton Account Cr. By Robert Brown.* Thus you see that for every *Debit* there is a corresponding *Credit*. You see, also, that the Dr. in the Ledger is *real* or *personal*, being the *Customer*; but that the Cr. is *unreal* or *fictitious*, being the Goods Account, that is, *Cotton*. Hence arises the distinction between *real* or *personal* accounts, and *unreal* or *fictitious* accounts in the Ledger. But let it be remembered that those accounts which on account of their *names* are called *unreal* or *fictitious*, are quite as *real* and *personal* as any other, because they represent the *Merchant himself*; and if the Merchant's name were *John Cassell*, the actual meaning of the second of the preceding entries in the Ledger would be: *John Cassell Cr. By Robert Brown.*

2. When a Customer who bought goods on credit, pays the value in money or in bills, the nature of the transaction above described is in one sense reversed; for the Merchant is now considered to become the *Debtor*, and the Customer to become the *Creditor*. That this is not strictly the case, according to the original meaning of these words, you know; but these words are strictly applicable, if we take the following broad principle of Bookkeeping into account, a principle not only of simple justice, but of stern necessity. It is this: That a Merchant or a Customer is a *Debtor* for whatever he receives, and a *Creditor* for whatever he gives away. The justice of this principle must be obvious to every one; in fact, it may be considered as the fundamental axiom of Bookkeeping; but the stern necessity of it may not be so obvious; this, however, we shall endeavour to show. We have said that for every *debit* there is a corresponding *credit*; and we may add, that for every *credit* there is a corresponding *debit*. Now, if in the Ledger a Customer is *debited* for *goods* that he buys on credit, it stands

to reason, that for *money* he pays on account of these goods, he should be *credited*; and if, in the Ledger, a Merchant is *credited* for goods that he sells on credit, it stands equally to reason, that for money he receives on account of these goods, he should be *debited*. It is plain, then, that the amount of the *money* or *bills* paid by the Customer for goods purchased on credit, must be entered in the Merchant's books to the Customer's *credit*, that is, on the *Cr. side* of the Customer's account; and that the same sum must be entered in these books to the Merchant's *debit*, that is, on the *Dr. side* of the Merchant's account of Money or Bills. In this manner is the transaction settled, and accounts balanced between the Merchant and his Customer. Let us now take an illustration of this rule, by an example connected with the former: Feby. 15th, 1863, Robert Brown, a customer of mine, paid me, or I received from him, £100 for Cotton sold to him on the 15th of January last. Here, I the Merchant become *Debtor* to my Customer, for what I receive, and Robert Brown becomes my *Creditor* for what he has given away. I must accordingly enter his name and an account of this transaction in my books, that is, in the *Cash-Book*, in the following manner:—

Dr. CASH ACCOUNT. *Cr.*

1863.			£.	s.	d.					
Feby.	15	To Robert Brown	100	„						

This entry in the *Cash Book* would be transferred to the *Journal*, at the time when it was made up, as follows:—
(*Page* 4.)

Date.	Fol.	February, 1863.	Dr. £.	Dr. s.	Dr. d.	Cr. £.	Cr. s.	Cr. d.
15	2	Cash, *Dr.*	100	„	„			
	3	To Robert Brown				100	„	„

Again, this entry in the *Journal* would be posted into the *Ledger*, as in the following examples:—
(*Folio* 2.)

(*Folio* 2.)

Dr. CASH ACCOUNT. *Cr.*

1863.				£.	s.	d.					
Feby.	15	To Robert Brown ...	4	100	„	„					

(*Folio* 3.)

(*Folio* 3.)

Dr. ROBERT BROWN. *Cr.*

1863.				£.	s.	d.					£.	s.	
Jany.	15	To Cotton	4	100	„	„	Feby.	15	By Cash	4	100	„	„

In the first entry here from the supposed Ledger, the form of the account and the entry itself are exactly the same as in the *Cash-Book*. Nor can this be otherwise; for the *Cash-Book* is merely an abstraction of the *Cash Account* from the *Ledger* as kept on the old Italian system, for the sake of the division of labour; so that the *Cashier* may have only *this Account* to attend to in a large establishment; while the *Book-keeper* attends to the *other Accounts*. In small concerns, the *Cash Account* may still be kept in the Ledger, instead of being kept in a separate book called the *Cash-Book*; but this system we would by no means recommend.

In the second entry above from the supposed *Ledger*, we have combined the *former* transaction with the *present*, in order to show how matters are settled between the Merchant and his Customer. The account of *Robert Brown* in the Ledger is now considered closed or balanced; and may be considered as struck off, unless he renews transactions with the Merchant by fresh purchases, and subsequent payments.

SHORT SHORT-HAND.

Since the publication of our lessons in *Phonetic Short-hand*, we have received a variety of communications on the subject. To these we have given answers in our notices, as they occurred. We have also received books on the subject of Short-hand; of these, some contain new systems, or rather modifications of old ones; but all seem to us to be inferior to that which we have adopted in our lessons. Though we are thus explicit in regard to this matter, we do not mean to say that the *ne plus ultra* of stenographic invention has been attained. In our observations lately appended to some communications on Phonetic Short-hand, we have acknowledged the defect of phonography, in general, to be the want of sufficiently distinctive marks for each separate sound or letter; for we hold, and we are backed in our opinion by practical men, that the system of *thick and thin characters, of the same form exactly*, for letters pronounced by the same organ, is not sufficient for the ordinary purposes of reporting from the mouth of a rapid speaker; and, that it is next to impossible for the hand so to guide itself, as *always and at all times* to be able to observe the distinction between the *thick and thin* marks, so that they shall never be confounded in writing. Hence, if these marks are apt to be confounded in writing, they are equally apt to be confounded in reading, and thus the object of the reporter will be defeated. Absolute variety and dis-

tinctiveness of character, therefore, we hold to be the essential feature of a correct and explicit system of Short-hand.

Short Short-hand (by Laming Warren Tear,) is a rare specimen of impracticable ingenuity. We shall perhaps give a clear idea of it, by saying that it consists in writing *on a chess-board*, each square of which furnishes nine "positions" for the placing of letters; and as each position has the value of a letter, every stroke made at the beginning of a word stands for two letters—the one written, and the other implied by the position of the character. In this way, the author says, he can express, by three marks of the pen, an average of four syllables. A great saving, certainly; but does he not lose far more than he gains by the constant dodging after the right positions? To *learn* the values of these *eighty-four* positions, and of the vast number of *arbitrary* marks (not alphabetic) for double letters, conjunctive and disjunctive terminations, pronouns, auxiliary verbs, 'contractions' and 'abbreviations,' may be *possible*, but he who has performed this feat may be fairly rated as a mnemonic prodigy. Supposing these elements to be perfectly committed to memory, the continual perplexity of the eye and hand in selecting and pouncing upon the right positions, would be quite incompatible with quick and accurate writing. The plan of indicating auxiliary verbs, and other subordinate words, by variously placed dashes, dots and commas, is somewhat like that in Fancutt's "Stenography Remodelled," but the latter has the advantage of being greatly more simple—to the learner at least.

The alphabetic part of the system is founded on the old principle of following the spelling rather than the sound; the orthographic writing must therefore be full of literal ambiguities. The marks and positions for alphabetic *combinations* may, however, if they can be brought into use, preserve the writing from this source of difficulty. The alphabet used is Gurney's, with some alterations; but that generally important rudiment, an alphabet, is of very subordinate consequence in a system where the positions play so large a part as is expressed in the author's extraordinary paradox, that "the subject to be taken down is more than half written before the speaker opens his lips." Just as the marble quarry contains the sculptures, before mallet or chisel has been applied, so does the chess-ruled page contain the discourse before it has been planned or uttered by the speaker.

All that is gained by the use of the eighty-four positions is that the writing of initial letters and combinations may be dispensed with. In the P. E. system of Phonetic Shorthand, these initial elements being reduced in size to mere ticks, are written with the next character almost as rapidly as it could be written alone. And being, besides, all *alphabetic*, they impose no burden on the learner's memory.

The amount of time necessarily sunk in the acquisition of "Short Short-hand" would undoubtedly require a greater return in the way of practical saving, than could possibly be gained, to make the instrument profitable. Learners, it is to be feared, would think it a very *long* short-hand—or at least *very long in being short*.

LESSONS IN MECHANICS.—No. XVIII.

ROAD-MAKING AND PUBLIC WORKS—(*continued*).

THE CONSTRUCTION OF CANALS.

With regard to the formation of canals for purposes of inland navigation, the general principles to be observed are—1, an efficient supply of water; 2, an adaptation to the level of the country; 3, the proper distribution of stop-gates; 4, a sufficient number of weirs; 5, means for draining off the water if required; 6, efficient drainage to the towing-paths, and the prevention of leakage in the canal itself.

With regard to the supply of water, it is important that the engineer should, if possible, avail himself of a natural lake in the locality; but as this may not be practicable, the difficulty must be met by creating an artificial reservoir. In the Caledonian Canal the whole, or nearly the whole, of the water supply is derived from Lochs Ness, Oich, and Lochy. In many of our canals there are no such natural facilities, and the water has to be obtained by the creation of reservoirs, themselves fed either in a natural or artificial way, according to the physical character of the country. Of course, it is most important that a steady and constant supply of water be obtainable, and the method of obtaining that supply is the first subject to which the practical engineer must turn his attention. To do so requires a good knowledge of the physical condition of the locality. The next point is to determine the direction which the canal shall take. The level of the canal should be as nearly as possible preserved, the very nature of things requiring this; and artificial means have usually to be adopted in carrying out the work. Where the nature of the country is such that one extremity of the canal is much more elevated than the other, when the inequalities in the extent of the line are considerable, and the vessel on the canal has to ascend and descend inclined planes, locks are almost universally employed. The construction of a lock is very simple; but, simple as it is, it never appears to have occurred to the ancients, is certainly not to be found in any of their great works, and is, we believe, still imperfectly understood in China. The object is to keep certain portions of the canal, where the elevation takes place, in such a condition as to permit the egress or ingress of the water, allowing the water so admitted to rise to the level of the upper portion of the canal, as seen not only on our canals, but our rivers also. Huge gates are opened for the admission of any vessel, which is accordingly received into a sort of stone chamber; the lock gates are then closed, and the water permitted to enter from below, until the boat or other vessel is raised to the elevation of the water beyond the lock; these gates are then opened, and the vessel glides out smoothly, at a height, perhaps, of eight or ten feet above the level of the water which it quitted when it entered the lock. Modern canals have served to perfect our old-fashioned river locks. Our engineers, in the construction of canals, found themselves frequently compelled to economise water, and the sides of a lock were consequently made water-tight, the chamber being formed of stone, which rendered the escape of the water impossible.

Other methods of elevating a vessel on a canal from one height to another are sometimes employed; into these methods it is unnecessary to enter here. One point it is of great consequence for the engineer to attend to thoroughly, namely, the stop-gates, which divide the canal into sections. The employment of these gates renders it practicable, should any accident happen to any one part of the canal, to prevent the damage extending to any other. By the closing of the stop-gates the injury may be confined to one part only, and so be the more easily remedied. Another very important point is that of a sufficient number of weirs, and ample means of drawing off the water of the canal, if required. The drainage, indeed, should be carefully attended to, both as regards its occasional necessity for the whole or any part of the canal, and its constant necessity for the preservation of the towing-paths. Lastly, though not by any means the least important, is the prevention of leakage in the canal itself. The canal must be water-tight. "Puddle it—puddle it!" were among the last words of the great canal maker; and surely it is the best advice that can be given.

But canals are on the decline: the iron roads are taking their places, or carrying off their traffic. Before we say anything of these iron roads, we may offer some remarks on the metal of which they are made.

IRON.

In our age of iron, our mineral resources in this respect are of the utmost importance. The rise and progress of our iron manufacture may be divided into two periods—the first, extending from the earliest historical notice which we have, down to the introduction of coal as fuel for smelting; and the second, extending from that period down to the present time. At a very early period England was celebrated for her iron ore, and there are few iron districts even at the present day in which the remains of old workings are not to be discovered. Even in districts where ore is no longer found, there are indications of workings having there been carried on at a former time. The early iron trade was at its greatest height in 1615, when, on reputable authority, there were in England, Ireland, Scotland, and Wales, 800 furnaces, which, if worked 40 weeks a year, would produce 180,000 tons. Various causes led to a decline in the manufacture, and in 1740 it was only 17,350 tons, produced by 59 furnaces. Attempts to employ coal for smelting are said to have been made in 1620, but its use was only established in 1740, the second epoch in the manufacture of iron.

From 1740 to 1788 the annual amount of ore manufactured into iron rose to 70,000 tons; in 1800 to 180,000; in 1825 to 600,000; and in 1851 to 2,500,000: South Wales producing 750,000; Scotland, 775,000; South Staffordshire and Worcestershire, 600,000; and other districts, 400,000. In 1851 the exports were upwards of 1,200,000 tons, not including tin plates, hardware, cutlery, and machinery. The whole value of the exports of iron was £10,424,139. Since that date the increase in the exports have been very great, especially since the conclusion of the French Treaty.

PHYSICAL EDUCATION.—No. II.

Physical Education, as a science, was unknown to the ancients; their gymnastic exercises, no doubt, tended powerfully to develope the organs of the body, and to increase their natural powers; but the scientific ideas which are included in the exercises of our modern gymnasia were undeveloped. We proceed, then, to examine the nature of the causes which have led to our improved views on this subject.

The motive agents in the human body are of two kinds: the passive, in which class are contained the bones; and the active, to which class belong the muscles. No physical law is more evident than that any organ is increased in size by the exercise of it. The arm of a blacksmith, which is always found developed to a great extent, may be adduced as a proof of this. Most persons will find the fingers of the right hand larger than those of the left. Workmen engaged in trades in which the right hand is more exclusively employed, will exhibit this difference in size to a more marked extent. Phrenologists tell us than even the more noble organs of the mind follow this fundamental law, and that according as the different faculties of the mind are exercised or cultivated, the brain is actually altered in form or increased in size, in the parts where they say the organs of these mental powers lie.

From this fact it follows that the first effect of exercise must be to develope the muscles, which are in fact nothing but carnified blood; as blood has been said to be flesh in a fluid state. The appropriation of a greater quantity of blood to the muscles, occasions a proportionate increase in the production of this fluid itself; otherwise the whole system would be impoverished to supply the muscles. Then again, the muscles cannot contract without acting upon the bones to which they are attached; and thus the bones, too, are increased in strength and size. The development of the muscles is found much more strongly marked (other things being equal) in the male than in the female skeleton; simply because the muscular action of the male sex is greater than that of the female sex.

Certain bones cannot be increased in their size, without producing a most important effect in the enlargement of the cavities formed by their union. We may instance the case of the ribs, to which are attached several of the muscles which move the arm and the shoulder. To raise a weight, or to suspend the body by the hands, the great pectoral muscle, amongst others, is forcibly contracted, and drags at the ribs in which it is inserted. The effect of this is easily understood: the ribs, incessantly drawn outwards, increase the space to be occupied by the lungs; the lungs are enlarged to fill up this increased space; more blood is admitted into the lungs at each respiration, and the vital action of the lungs upon the blood is carried on more largely.

Fig. 1.

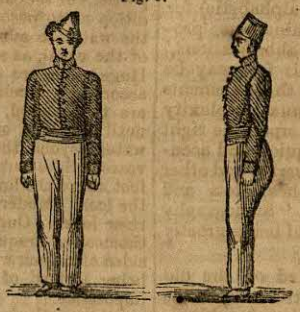


Fig. 2.

Fig. 3.

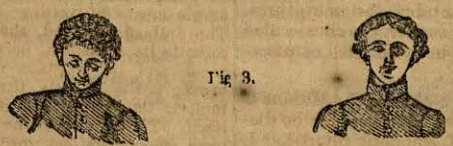


Fig. 4.

Fig. 5.

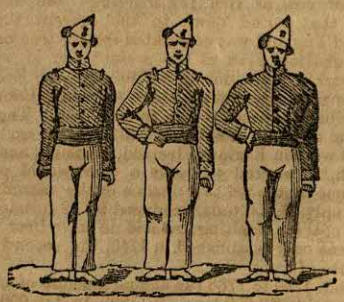
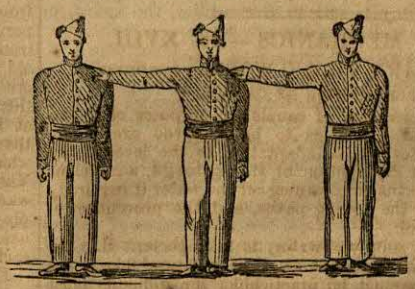


Fig. 6.



This enlargement of the chest, and greater activity of respiration, are some of the valuable effects of the exercise of the superior members; muscular exertion, however, acts in other ways to make the respiration more active; every exertion of any consequence, requires a suspension of breathing after a long inspiration, so that the chest may furnish a firm point of support to the muscles, which it could not do, were the respiratory motions continued. The result of this is also to enlarge the lungs by the very circumstance of their being kept dilated for a longer or shorter space of time, and this dilatation being frequently repeated.

The breathing cannot be affected without the heart, in its turn, feeling the influence of it. If the lungs are increased in size, the heart must be increased in energy of action, so as to proportion the size of the sanguineal stream to the space it has to fill, and afterwards to drive the blood sent back from the lungs through the thousand channels of the body. Digestion, too, participates in the benefits of exercise. The digestive organs require certain movements, by the aid of which the food in the stomach is more easily penetrated by the gastric juices, and more thoroughly elaborated. These movements generally take place in the gastro-intestinal tube itself, the walls of which are in part muscular; but it is known that these motions are powerfully seconded by the muscular action of the abdominal walls.—Now in nearly all actions of the body of any consequence; for example, in that of walking, the great abdominal muscles are put into operation.

If, as we have seen, the breathing, the circulation, and the digestion are thus rendered active, there are three important

reasons why the nutrition of the body, or the actions by which the different organs appropriate the food taken into the stomach, should be rendered equally active. But there is a fourth reason for the increase of the nutritive action of the body, as a result of exercise.

Heat is increased by motion; the contraction of a muscle, without actual locomotion, is sufficient to elevate the temperature of the muscle half a degree. Muscular movements, repeated with sufficient energy, have thus the effect of rendering composition and decomposition more rapid. In short, the energetic operation of all the particles in the human body is accelerated by exercise. Besides, we cannot suppose that all the physical functions of the system can be thus accelerated, without the mind being in some degree beneficially affected. We all know how intimate is the connexion between mind and matter. We know how languid is the mind, when the body is unwell; and we cannot, therefore, believe that the exercises which impart such activity to the body can be without its effects in invigorating the mind.

Physical exercise, however, which possesses so many advantages, may also, like everything else, have its evils. But it is the province of gymnastics, that is, exercise raised to a science, to prevent these evils as much as possible. Amongst the evils to which we refer, the following may be named:—Excessive exercise produces fatigue—a sensation differing from those properly so called, inasmuch as it operates without the intervention of any active agent. It has its seat in the muscles, but it spreads over the whole body, and even the mind does not escape. Some men are more capable of resisting fatigue than others, according to their constitution, temperament, habits, and diet. Persons engaged in excessive exercise require plenty of nourishment. The lack of this, with an excess of labour, frequently brings on typhoid fever.

The muscles or their tendons may be broken by violent muscular contraction; and even the bones themselves may be broken by this means; but this case is rare, though well authenticated instances of it are on record.

The lungs suffer by an excessive and too-often repeated expansion of their tissue; the pulmonary cells being distended beyond the proper degree, lose their elasticity, and are even sometimes ruptured, producing the disease called *pulmonary emphysema (inflation of the lungs)*.

The retention of the venous blood in the veins (occasioned by the suspension of respiration) is capable of producing serious consequences, by injuring the heart and the veins. There is no doubt that an excessive degree of exercise favours a predisposition to *aneurism (nervelessness)* of the heart. Digestion, too, which is aided by exercise, when moderate, suffers materially from it when taken in a violent and unseasonable degree.

The same cause will also affect the whole of the nervous system. The walls of the abdomen, too, are also sometimes injured by the action of their internal organs, through excessive exercise.

Gymnastics, however, being defined as a science applied to muscular movements, will, if properly taught, deprive exercise of its evils, and impart only its benefits. Gymnastic exercises are useful to all; but to the soldier, the sailor, or the traveller, they are indispensably necessary.

GYMNASTIC EXERCISES.

We propose to divide our brief treatise upon gymnastics into three parts:—1°. The Elementary Movements; 2°. The Exercises of Wrestling, Walking, Running, and Jumping; 3°. The method of Climbing knotted and smooth Ropes; Exercises with Poles; Sphaeristic Exercises (such as throwing of balls or other projectiles); and the Art of Swimming.

I. Before commencing our instructions, we would especially impress upon the mind of the pupil the advantages of *singing* while performing the elementary Gymnastic Exercises. Not only will the respirative organs be thus well developed—an essential point in a good constitution, but the regular cadences of the rythm will so enable the pupil to keep time in each action, that he will find himself able to keep up the exercise for a length of time which would otherwise be impossible. In singing for this purpose, words need not be sung, all that is required is the rythm or cadence. We would even not point out any particular tune; the pupil may sing whatever pleases him best; for we repeat that all that is requisite in these exercises, is the rythm to enable him to keep regular time to his movements.

As a proof of the sustaining power of a tune, we might point out many instances. Look at those young ladies—pale, delicate-looking creatures, with weak, nervous constitutions! How would they endure the toil of dancing through a whole night did not the cadence of the music come to their aid. A regiment of soldiers, tired with a long march, can start afresh and feel no more fatigue, when they hear the drum and fife. A sailor sings as he works at the capstan, or hauls in a rope. Scores of other instances might be given of this effect of music, or, rather, of rythm in sustaining the regular action of the muscles.

This being understood, we proceed to our exercises. The pupils are arranged in a straight line, about two feet apart from one another, and the teacher then puts them into the following position:—The heels upon the line, and close together; the toes well turned out; the body upright, the shoulders kept well down; the arms hanging down by the sides, and the hands closed lightly with the nails forward; the head straight see fig. 1.

The teacher having fixed the pupils in this position, makes them execute the following elementary exercises:—

Exercise 1. Turning the head; when the teacher gives the following words of command:—

1. *Head to the right!*
2. *Move!*
3. *As you were!*

At the word *Move*, the pupils all move their heads towards the right shoulder and back again gradually and successively bringing it to the furthest possible point.

At the words, *As you were*, the pupils bring their heads back again to the straight position.

The head is turned to the left, by reversing the above orders.

The next part of this exercise is to turn the head (fig. 2) alternately each way. These being the words of command:—

1. *Head alternately to the right and to the left!*
2. *Move!*
3. *As you were!*

Exercise 2. The head is turned alternately backwards and forwards. The words of command are the following:—

1. *Head backwards and forwards!*
2. *Move!*
3. *As you were!*

At the word *Move*, the pupil turns his head alternately backwards and forwards by a slow and regulated motion. At the words, *As you were*, the head is restored to its original position (fig. 3).

Exercise 3. The head is inclined alternately to the right and to the left, the words of command being given in the same way as before, (fig. 4); that is, the head is inclined to the right and to the left by alternating the motion.

For the performance of the following exercises, it is requisite to have regular distances between each of the pupils. There are two distances, the *half* and the *full* distance.

For the exercise of the *half* distance, the words of command are:—

1. *To the right, half distance!*
2. *Move!*
3. *As you were!*

At the word *move*, the pupil at the right extremity of the line does not move; the others keep their left arms unmoved, but place their right hands on their haunch, the four fingers being in front, and the thumb behind, so that the elbow of each pupil touches the left arm of his neighbour on the right, fig. 5.

At the words, *As you were*, the arms are brought down to the sides as before.

For the exercise of the full distance, the words of command are:—

1. *To the right, (or, to the left) Full distance!*
2. *Move!*
3. *As you were!*

At the words, *Move*, the pupil at the right extremity of the line does not move; the others keeping their left arms unmoved, move their right arms slowly from their sides, stretching them out, and placing their right hands on the left shoulder of the pupil who is next to each on the right, the thumb being in front and the four fingers behind; at the words, *As you were*, the hands and arms are restored to their first position. Fig. 6. The reverse means are employed in taking the distances to the left.

LESSONS IN ENGLISH.—No. LV.

By John R. Beard, D. D.

(*Continued from page* 200.)

Adjective Pronouns, or Pronominal Adjectives.

As already intimated, the union in one word of the attributes of an adjective and those of a pronoun, gives birth to a class of terms which may be designated as *adjective pronouns*, or *pronominal adjectives*. We give the ensuing list:—

Another	One	Some
Any	The one	Some one
Each	The other	Such a one.
Each other	One another	also,
Either	Own	The former
Neither	Same	The latter
Every	The same	

There are other forms of words, such as *all*, *anybody*, *somebody*, &c., which have been ranked under our present head, but which, to me, appear to fall under other categories. *All*, for instance, is clearly an adjective; *somebody* is made up of *some*, an adjective, and *body*, a noun. It must, however, be admitted that the lines of demarcation here are not very clear, and a word which appears to one person as an adjective, may to another seem to take rank among pronouns. But it may be suggested that, whatever other quality a word may possess or acquire, it must, in order to take rank among pronouns, be capable of standing instead of a noun, and that independently, and not merely as an adjective having its noun understood.

The derivation of the words which form the foregoing list is sufficiently clear without additional remarks.

Some of the words remain uninflected; as, *any* and *own*. Most of them are, however, capable of a possessive case; as, *another's*, *each other's*, *one another's*, *either's*, *neither's*, *the former's*, *the latter's*; e. g.,

Thomas and William fought; the former broke *the latter's* left arm, and the latter knocked out *the former's* right eye.

Exercises.—Complete.

The Seventy's translation of the Old Testament is very valuable. The boy is not only young, but he is also wealthy.

"Attend to what a lesser muse indites."—*Addison.*

Barcelona was taken through a most unexpected accident. The watch is beautiful, but it is dear. Are you the bridegroom? No, I am not he. I will not destroy the city for twenty's sake. The inhabitants of the lesser Asia (Asia Minor) are dark-skinned. Manslaughter is not murder. Jesus answered: "If I honour myself, my honour is nothing; it is my Father that honoureth me, of whom ye say that he is your God; yet ye have not known Him, but I know Him." They sat down in ranks by hundreds and by fifties. God made two great lights; the greater light to rule the day, and the lesser light to rule the night. These shoes are home-made. Suicide is self-murder. The avaricious man is a self-tormentor. Whatever is humane is wise; whatever is wise is just; whatever is wise, just, and humane, will be found the true interest of states.

"I still had hopes, my latest hours to crown,
Amidst these humble bow'rs to lay me down." *Goldsmith.*

A boy should understand his mother-tongue well before he enters upon the study of a dead language; or, at any rate, he should be made perfect master of the meaning of all the words which are necessary to furnish him with a translation of the particular one which he is studying. No discipline is more suitable to man, or more congruous to the dignity of his nature, than that which refines his taste, and leads him to distinguish, in every subject, what is regular, what is orderly, what is suitable, and what is fit and proper. Those words which were formerly current and proper, have now become obsolete and barbarous. Alas! this is not all: fame, too, in time tarnishes; and men grow out of fashion. Charlemagne was the tallest, the handsomest, and the strongest man of his time; his appearance was truly majestic, and he had surprising agility in all sorts of manly exercises. Money, like other things, is more or less valuable, as it is more or less plentiful.

"His words bore sterling weight, nervous and strong."
In manly tides of sense, they roll'd along." *Churchill.*

"To make the humble proud, the proud submit,
Wiser the wisest, and the brave more brave." *W. S. Landor.*

I am satisfied that in this, as in all cases, it is best and safest, as well as most right and honourable, to speak freely and plainly. The Gospel, under the aid of God's Holy Spirit, has power to make the proud humble, the selfish disinterested, the worldly heavenly, and the sensual pure. God's providence is higher, and deeper, and larger, and stronger than all the skill of his adversaries; and his pleasure shall be accomplished in their overthrow, unless they repent and become His friends. Words are voluntary signs; and they are also arbitrary, except a few simple sounds expressive of certain internal emotions, and certain external movements, which sounds being the same or nearly the same in all languages, must be the work of nature; thus the unpremeditated tones of admiration are the same in all men.

It may serve to show the student the changes our language has undergone, if I subjoin an exercise for correction, the corrections to be made according to the statements and rules laid down under each head. My purpose can be answered only by the instances being taken from authors of high repute. From such authors, consequently, they will be taken. The term "correction" may lead to a false impression. Let no one who makes the required corrections, suppose that he writes better English than the writers whose names will follow. The truth, in general terms is, their English was perfect in their day. The occasion for correction arises from the fact that since their time our language has undergone much change, and it is the English of the present day that the student must aim to write.

Exercises for Correction.

"Our language is now certainly properer and more natural than it was formerly."—*Bishop Burnet.* "Four of the ancientest, soberest, and discreetest of the brethren shall regulate it."—*Locke.* "What heaven's Great King hath powerfulest to send against us."—*Milton.* "Benedict is not the unhopefulest husband that I know."—*Shakspeare.*

"——— That what she wills to do or say,
Seems wisest, virtuousest, discreetest, best." *Milton.*

"For we which live, are always delivered unto death for Jesus' sake."—*Paul.* "They which believe in God must be careful to maintain good works."—*Barclay.* "Before his book he placeth a great list of that he accounts the blasphemous assertions of the Quakers."—*Barclay.* "More shame for ye; holy men I thought ye."—*Shakspeare.*

"There is no vice so simple but assumes
Some mark of virtue on his outward parts."
Shakspeare.

"Unless when ideas of their opposites manifestly suggest themselves."—*Wright's Grammar.* "Every one of us, each for hisself, laboured how to recover him."—*Sidney.*

Specimen of Parsing.

"Judges ought to be more learned than witty, more reverend than plausible, more advised than confident; above all things, integrity is their portion and proper virtue."—*Lord Bacon.* "Who art thou that judgest another man's servant?"—*Paul.*

Judges, from *judge* (Latin, judex), a common noun, masculine gender, plural number, of the third person, the *subject* to the verb *ought*.

Ought, from *to owe*, a verb in the past tense, third person singular number, agreeing with its subject *judges*.

To, a preposition.

Be, a verb in the infinitive mood, dependent on *to*.

More, an adverb, qualifying *learned*.

Learned, a participle, compared by the adverb *more*.

Than, a conjunction, required after *more*, thus, *more than*.

Witty, an adjective, may be compared thus, witty, wittier, wittiest or witty, *more* witty, *most* witty.

Reverend, an adjective, from the Latin participle *reverendus*, which is connected with vereor, *I respect*, *I fear*.

Plausible, an adjective, compared by *more* and *most*, as being a polysyllable.

Advised, a participle, used as an adjective, compared by *more* and *most*.

Confident, an adjective, from the Latin cum, *with*, and fides, *trust*, compared by *more* and *most*.

Above, a preposition.

All, an adjective, qualifying *things*.

Things, a noun neuter, in the plural number, dependent on the preposition *above*.

Integrity, an abstract noun (from the Latin integer, *whole*, *sound*, *uninjured*), in the singular number of the neuter gender, the third person, being the subject to *is*.

Is, a verb, present time, agreeing with its subject *integrity*.
Their, a possessive pronoun, third person plural, constructed with a noun.
Portion, a noun neuter, singular number, third person, explanatory of the noun *integrity*.
And, a conjunction.
Proper, an adjective, qualifying *virtue*; *proper* is one of those nouns which do not admit of comparison.
Virtue, an abstract noun, neuter gender, third person singular.
Who, an interrogative pronoun.
Art, a verb, second person singular, present indicative of the verb *to be*.
Thou, a personal pronoun, of the second person singular.
That, a relative pronoun, agreeing with its antecedent *thou*.
Judgest, a verb, in the second person singular, to agree with *that*.
Another, an adjective, qualifying *man*; had the words run "another's servant," then *another's* would be commonly accounted a pronoun.
Man's, a common noun, of the masculine gender, third person, singular number, in the possessive case, governed by *servant*.
Servant, from the Latin servus, *a slave*, a noun of the common gender, the object to the verb *judgest*.

WORDS WITH THEIR PROPER PREPOSITIONS.

Enjoin on, immediately from the French enjoindre, *to command*; and through that from the Latin injungere, *in*, *on*, or *upon*, and jungo, *I join*.
Enter in, *into*, immediately from the French entrer, *to go in*; so from the Latin intra, *within*.
Envious of, French envie, *pain at others' success*, and Latin invidia, of similar import.
Equal to, Latin aequalis, and that from aequus, properly *a level*, *flat*, or *plane*, hence *equal* or *just* in a moral sense.
Equivalent to, aequus, and valeo, *I am strong*.
Espouse to, from the French epouser, *to marry*; and that from the Latin spondere (whence sponsus and sponsa, *a bridegroom* and *a bride*), *to promise*, *betroth*; the *s* in espouse is derived from the obsolete form espouser, and belongs to the root, as is seen in spondere, sponsus, and sponsa.
Estimated at, French, estimer, and that from the Latin aestimo (aes), *to give*, *the value of*.
Estranged from, French etranger, *a foreigner*; Latin extraneus, *living beyond the borders*.
Exception to, ex, *from*, and capio, *I take*; Latin.
Excluded from, ex, *out of*, and claudo, *I shut*; Latin.
Expelled from, ex, *out of*, and pello, *I drive*; Latin.
Expert in, *at*, from the Latin expertus, *having learned by trial*.
Exposed to, ex, *out*, and pono, *I place*; Latin.
Expressive of, ex, *out*, and premo, *I press*; Latin.

LESSONS IN GERMAN.—No. LVI.

§ 43. THE NUMERALS.

In German, as in other languages, the numerals are arranged into classes according to their signification, viz. CARDINAL, ORDINAL, DISTRIBUTIVE, &c. as will be explained under their respective heads.

§ 44. THE CARDINAL NUMBERS.

The cardinal numbers, whence all the others are derived, are those answering definitely to the question: "*How many?* They are the following:

Eins (ein, eine, ein)	1.	dreißig	30.
zwei	2.	ein und dreißig ꝛc.	31, &c.
drei	3.	vierzig	40.
vier	4.	fünfzig	50.
fünf	5.	sechzig (not sechszig)	60.
sechs	6.	siebenzig or siebzig	70.
sieben	7.	achtzig	80.
acht	8.	neunzig	90.
neun	9.	hundert	100.
zehn	10.	hundert und eins	101.
elf	11.	hundert und zwei	102.
zwölf	12.	hundert und drei ꝛc.	103, &c.
dreizehn	13.	zwei hundert	200.
vierzehn	14.	drei hundert	300.
fünfzehn	15.	tausend	1000.
sechzehn	16.	zwei tausend	2000.
siebenzehn or siebzehn	17.	drei tausend	3000.
achtzehn	18.	zehn tausend	10,000.
neunzehn	19.	hundert tausend	100,000.
zwanzig	20.	eine Million	1,000,000.
ein und zwanzig	21.	zwei Millionen	2,000,000.
zwei und zwanzig ꝛc.	22.		

(1) OBSERVE that the cardinals are, for the most part, *indeclinable*.

(2) Ein, (*one*) however, is declined throughout like the indefinite article. It *is*, in fact, the same word with a different use; and is distinguished from it in speaking and writing, only by a stronger emphasis and by being usually written with a capital initial. This is the form which it has, when immediately before a noun, or before an adjective qualifying a noun. Thus:

Masculine

Nom. { Ein Mann, One man. / Ein guter Mann, One good man.
Gen { Eines Mannes, of One man. / Eines guten Mannes, of One good man.

Feminine.

Nom. { Eine Frau, One woman. / Eine gute Frau, One good woman.
Gen. { Einer Frau, of One woman. / Einer guten Frau, of One good woman

Neuter.

Nom. { Ein Kind, One child. / Ein gutes Kind, One good child.
Gen. { Eines Kindes, of One child. / Eines guten Kindes, of One good child.

(3) In other situations, ein follows the ordinary rules of declension: thus in the

a. Old Form.

N.	einer,	eine,	eines,	one.
G.	eines,	einer,	eines,	of one &c.

b. New Form.

N.	der eine,	die eine,	das eine,	the one.
G.	des einen,	der einen,	des einen,	of the one, &c.

c. Mixed Form.

N.	mein einer,	meine eine,	mein eines,	my one.
G.	meines einen,	meiner einen,	meines einen,	of my one &c.

In relation to the numeral ein note, further, these three things:

1. That ein merely counting, it has the termination of the neuter, with e, however, omitted; as eins, zwei, drei, one, two, three, &c.

2. That ein, may be used in the *plural*, when the design is to distinguish classes of individuals; as, die Einen, *the ones*, der Einen, *of the ones*, &c. just as, in English, we say, *the ones*, *the others*.

3. That ein, unlike the English *one*, cannot be employed so as to fill the place of a noun: thus, we cannot say, in German, a new *one*, a good *one*, &c. In such cases, the adjective stands alone.

(4) Zwei (*two*) and drei (*three*), when the cases are not sufficiently pointed out by other words in the context, are declined thus:

N.	Zwei, two,	drei, three,
G.	Zweier, of two,	dreier, of three,
D	Zweien, to or for two,	dreien, to or for three,
A.	Zwei, two,	drei, three.

In place of Zwei, beide (*both*) which is declined like an adjective in the plural, is often employed; as beide Augen, both eyes; die beiden Brüder, both the brothers. The neuter beides never refers to *persons*. (Sect. 33. I.)

(5) All the rest of the cardinals, when employed *substantively*, take en in the *dative*: except such as already end in these

letters; as, ich habe es Fünfen gesagt, I have told it to five (persons).

(6) Hundert and Tausend are often employed as collective (neuter) nouns, and regularly inflected; as, singular nom. das Hundert, the hundred, gen. des Hunderts of the hundred, &c.; plural nom. die Hunderte, the hundreds, &c., Million, million, is, in like manner, made a noun (feminine,) and is in the singular always preceded by the *article*; as, Eine Million, a million.

(7) In speaking of the cardinals, *merely as figures or characters*, they are all regarded as being in the *feminine* gender: as, die Eins, the one, die Zwei, the two, die Drei, the three; where, in each case, the word, Zahl, (*number*) is supposed to be understood: thus die (Zahl) drei, the (number) three.

§ 45. Ordinal Numbers.

(1) The ordinal numbers are those, which answer to the question: "*Which one of the series?*" They are given as follows, with their corresponding cardinals; they are regularly inflected according to the rules already given for the declension of adjectives.

CARDINALS.		ORDINALS.
Eins (ein, eine, ein)	1.	der erste, the first.
zwei	2.	„ zweite, the second.
drei	3.	„ dritte, the third.
vier	4.	„ vierte, the fourth.
fünf	5.	„ fünfte, the fifth.
sechs	6.	„ sechste, the sixth.
sieben	7.	„ siebente, the seventh.
acht	8.	„ achte, the eighth.
neun	9.	„ neunte, the ninth.
zehn	10.	„ zehnte, the tenth.
elf	11.	„ elfte, the eleventh.
zwölf	12.	„ zwölfte, the twelfth.
dreizehn	13.	„ dreizehnte, the thirteenth.
vierzehn	14.	„ vierzehnte, the fourteenth.
fünfzehn	15.	„ fünfzehnte, the fifteenth.
sechzehn	16.	„ sechzehnte, the sixteenth.
siebenzehn or siebzehn	17.	„ siebenzehnte or siebzehnte, the seventeenth.
achtzehn	18.	„ achtzehnte, the 18th.
neunzehn	19.	„ neunzehnte, the 19th.
zwanzig	20.	„ zwanzigste, the 20th.
ein und zwanzig	21.	„ ein und zwanzigste, the 21st.
zwei und zwanzig &c.	22.	„ zwei und zwanzigste the 22nd.
dreißig	30.	„ dreißigste, the 30th.
ein und dreißig	31.	„ ein und dreißigste, the 31st.
zwei und dreißig &c.	32.	„ zwei und dreißigste &c. the 32d. &c.
vierzig	40.	„ vierzigste, the 40th.
fünfzig	50.	„ fünfzigste, the 50th
sechzig (not sechszig)	60.	„ sechzigste, the 60th.
siebenzig or siebzig	70.	„ siebenzigste or siebzigste, the 70th.
achtzig	80.	„ achtzigste, the 80th.
neunzig	90.	„ neunzigste, the 90th.
hundert	100.	„ hundertste, the 100th.
hundert und eins	101.	„ hundert und erste, the 100st
hundert und zwei	102.	„ hundert und zweite, the 102nd.
hundert und drei &c.	103.	„ hundert und dritte, the 103rd.
zwei hundert	200.	„ zweihundertste, the 200th.
drei hundert	300.	„ dreihundertste, the 300th.
tausend	1000.	„ tausendste, the 1000th.
zwei tausend	2000.	„ zweitausendste, the 2000th.
drei tausend	3000.	„ dreitausendste, the 3000th.
zehn tausend	10,000.	„ zehntausendste, the 10,000th.
hundert tausend	100,000.	„ hunderttausendste &c. the 100,000th, &c.

(2) Observe that, in the formation of the ordinals from the cardinals, a certain law is observed: viz. from zwei (*two*) to neunzehn (*nineteen*) the corresponding ordinal, in each case (dritte and achte excepted), is made by adding the letters te; as, zwei, *two*; zwei te, *second*; vier, *four*; vier te, *fourth*, &c. Beyond that number (nineteen), the same effect is produced by adding ste; as, zwanzig, *twenty*; zwanzig ste, *twentieth*; &c. Erste is from eher (*before*).

(3) Note, also, that der andere (*the other*) is often used in place of der zweite; but only in cases where two objects alone are referred to.

(4) In compound numbers, it must be observed that the last one only, as in English, bears the suffix (te or ste); but in this case, the units usually precede the tens: thus, der vier und zwanzig ste, the four and twentieth.

(5) We have also, a sort of interrogative ordinal, formed from wie (*how*) and viel (*much*), which is used when we wish to put the question: *Which of the number?* as, Der wievielste ist heute? what day of the month is to-day? Das wievielste ist es? how many does that make?

LESSONS IN GERMAN PRONUNCIATION.—No. III.

Die Canarienvögelchen.
Dee kå-nâh'-ree-en-fö'-ghel-chen.

Ein kleines Mädchen, Namens Carolina, hatte ein
Ine kli'-ness mait'-chen, nâh'-menss Cå-ro-lee'-nå, hât'-tai ine

allerliebstes Canarienvögelchen. Das Thierchen
âl'-ler-leep''-stess kå-nâh'-ree-en-fö'-ghel-chen. Dâss teer'-chen

sang vom frühen Morgen bis an den Abend und war
zânk fom frü'-hen mor'-ghen biss ân dain âh'-bend, öönt vâhr

sehr schön goldgelb mit schwarzem Häubchen. Carolina
zair shön golt'-gailb mit shwârt'-sem hoipt-'chen. Cå-ro-lee'-nå

aber gab ihm zu essen Saamen und kühlendes Kraut,
âh'-ber gâhp eem tsoo ess'-en zâh'-men öönt kü'-len-dess krout,

auch zuweilen ein Stückchen Zucker und täglich
ouch tsoo-vi'-len ine stück'-chen tsöock'-ker öönt taich'-lich

frisches Wasser.
frish'-shess vâss'-ser.

Aber plötzlich begann das Vögelchen zu trauern,
âh'-ber plöts'-lich bai-gânn' dâss fö'-ghel-chen tsoo trou'-ern,

und eines Morgens, als Carolina ihm Wasser bringen
öönt i'-nes mor'-ghens, âlss Cå-ro-lee'-nå eem vâss'-ser bring'-en

wollte, lag es todt im Käfig.
völl'-tai, lâhch ess toat im kai'-fich.

Da erhob die Kleine ein lautes Wehklagen um
Dâh err-hope' dee kli'-nai ine lou'-tess vai'-klâh-ghen öom

das geliebte Thier und weinte sehr. Die Mutter des
dâss gai-leep'-tai teer öönt vine'-tai zair. Dee mööt'-ter dess

Mädchens aber ging hin und kaufte ein anderes, das
mait'-chenss âh'-ber ghink hin öönt kauf'-tai ine ân'-dai-ress, dâss

noch schöner war an Farben und eben so lieblich sang wie
noch shö'-ner vâhr ân fârben öönt ai'-ben zo leep'-lich zâng vee

jenes, und that es in den Käfig.
yai'-ness, öönt tâht ess in dain kai'-fich.

Allein das Mägdlein weinete noch lauter, als es das
âl-line' dâss maicht'-line vi'-nai-tai noch lou'-ter, âlss es dâss

neue Vögelchen sah. Da wunderte sich die Mutter
noi'-ai fö'-ghel-chen zâh. Dâh vöön'-der-tai zich dee mööt'-ter

sehr und sprach: Mein liebes Kind, warum weinest du
zair öönt sprâhch: Mine lee'-bess kînd, vâh'-röom vi'-nest doo

noch, und bist so sehr betrübt? Deine Thränen werden
noch, öönt bist zo zair bai-trü'pt'? Di'-nai trai'-nen vair'-den

das gestorbene Vögelchen nicht in das Leben rufen,
dâss gai-stor'-bai-nai fö'-ghel-chen nicht in dâss lai'-ben roo'-fen,

und hier hast du ja ein andres, das nicht schlechter ist,
öönt here hâhst doo yâh ine ân'-dress, dâss nicht shlech'-ter ist,

denn jenes. Da sprach das Kind: Ach liebe Mutter, ich
den yai'-ness. Dâh sprâhch dâss kînt: âch lee'-bai mööt'-ter, ich

habe Unrecht gegen das Thierchen gehandelt, und
hâh'-bai öön'-recht ghey'-ghen dâss teer'-chen gai-hân'-delt, öönt

nicht alles an ihm gethan, was ich sollte und konnte.
nicht âl'-less ân eem gai-tâhn', vâss ich zoll'-tai öönt kon'-tai.

Liebe Lina, antwortete die Mutter, du hast sein
Lee'-bai lee'-nâh, ânt-vor-tai-tai dee mööt'-ter, doo hâhst zine

ja sorgfältig gepflegt. Ach nein, erwiederte das
yâh zorch'-fel-tich gai-pflaicht'. âch nine, err-vee'-der-tai dâss

Kind, ich habe noch kurz vor seinem Tode ein Stückchen
kint, ich hâh'-bai nöch köörts fore zi'-nem to'-dai ine stück'-chen

Zucker, das du mir für dasselbe gabst, ihm nicht
tsöök'-ker, dâss doo meer fü'r dâss-sel'-bai gâhpst, eem nicht

gebracht, sondern selbst gegessen. So sprach das
gai-brâcht', zon'-dern zelpst gai-ghess'-en. Zo sprâhch dâss

Mädchen mit betrübtem Herzen. Die Mutter aber
mait'-chen mit bai-trü'p'-tem herrt'-sen. Dee mööt'-ter âh'-ber

lächelte nicht über die Klagen des Mädchens, denn sie
lech'-chel-tai nicht ü'-ber dee klâhg'-en dess mait'-chenss, denn zee

erkannte wohl und verehrte die heilige Stimme der
err-kân'-tai vole öönt ferr-air'-tai dee hi'-lig-ai stim'-mai dair

Natur in dem Herzen des Kindes. Ach! sagte sie, wie
nâ-toor' in dem herrt'-sen des kin'-dess. âch! zâhch'-tai zee vee

mag dem undankbaren Kinde zu Muthe sein am
mâhch dem öön'-dânk-bâh-ren kin'-dai tsoo moo'-tai zine âm

Grabe der Eltern.
grâh'-bai dair el'-tern.

Vocabulary.

Das Canarienvögelchen.

Canarien, canary
Vögelchen, bird
Name, *m.* name
allerliebst, most lovely
Thierchen, little creature
von, of, from
früh, early
Morgen, *m.* morning
bis, till
Abend, *m.* evening
schön, beautiful
gelb, yellow
mit, with
schwarz, black
Häubchen, *n.* tuft
Haube, *f.* cap
geben, to give
ihm, to him (it)
zu to
essen, to eat
Saamen, *m.* seed
kühlen, to cool
Kraut, *n.* herb
zuweilen, sometimes
Stück, *n.* piece
Zucker, *m* sugar
frisch, fresh
Wasser, *n.* water
plötzlich, suddenly
trauern, to grieve
liegen, to lie
todt, dead
Käfig, *m.* cage
erheben, to raise, lift up
laut, aloud
Wehklagen, *n.* lamentation, *v. n.* to lament
Klage, *f.* complaint, lament
Weh, woe
weinen, to weep
allein, but, alone
neu, new
sich wundern, to wonder
lieb, dear
du bist, thou art
betrübt, sad
betrüben, to afflict
dein, thy
Thräne, *f.* tear
rufen, to call
werden, to become, *sign of the Future Tense*, shall, will; *sign of the Passive Voice*, to be, to be being
sterben, to die
Leben, *n.* to life
schlecht, schlechter, bad, worse
ach, oh
handeln, to act
unrecht, wrong
un, *Prefix* un, not
was, what
sollen, to be obliged, should
sein, seiner, *Genitive* of it, of him
sorgfältig, carefully
nein, no
erwiedern, to reply
kurz, short, -ly
Tod, *m.* death
mir, *Dative* to me
für, for
dasselbe, the same
sondern, but
selbst, myself, yourself, &c.
Herz, *n.* heart
lächeln, to smile
über, at, over
erkennen, to recognize
wohl, indeed, well
verehren, to honour
um, for, about, around
kaufen, to buy
ander, other
noch, yet, still
Farbe, *f.* colour, dye, paint
eben so, just so
jener, jene, jenes, that
thun, to put, to do
Ehre, *f.* honour
Stimme, *f.* voice
mögen, may
zu Muthe sein, feel
Muth, *m.* courage, mind
dankbar, grateful
bar, *Affix* productive of, able
Grab, *n.* grave

LESSONS IN LATIN.—No. LX.

By John R. Beard, D.D.

IDIOM.

Idiom is a word of Greek origin, signifying *what is one's own*. Hence idiom, as applied to a language, denotes that which is peculiar to that language.

In the study of languages, we find that which is common and that which is peculiar. The union and systematic arrangement of what is common to languages, gives rise to general grammar. The selection and exhibition of the qualities which are peculiar to any one language, form what is called the idiom of that language. On general grammar and on idiomatic usages is founded the philosophy of language, which is commonly called *philology*; whose business it is to discover and set forth the universal principles of language considered as the chief instrument of thought, considered also as a picture of the human mind, and a guide in *ethnology*, or the science which treats of the derivation of nations; and considered moreover as an auxiliary in general history.

A full treatise on Latin Idiom would itself require a volume. Already have many idiomatical usages been pointed out and explained. To a great extent the laws of Latin syntax are an exhibition of Latin idioms. Several of those laws, however, have their counterparts in other tongues. These accordingly belong to general grammar. Other usages are in strictness peculiar to the Roman writers and their imitators. For instance, the *ablative absolute* is not found in other languages; in Greek the *absolute* case is the *genitive*; in English, the *absolute* case (rarely used) is the *objective*.

I subjoin a few idiomatic usages with accompanying explanations, more for the sake of directing and encouraging the learner than to impart systematic instruction. With a few remarks on the collocation of words, a very important branch of idiom, I shall close these lessons, and therewith terminate a treatise, in which I have endeavoured to simplify the Latin grammar and facilitate the acquisition of the Latin language; aiming not so much at completeness as usefulness; for those who have diligently and intelligently accompanied me in this course of instruction, will find no difficulty in carrying forward their studies with the aid of the ordinary manuals. While, however, I do not profess to have exhausted the subject, I have, I believe, omitted nothing of consequence which ought to enter into an elementary treatise designed to assist the untaught, the half-taught and the self-taught to read the Latin prose classics.

When two nouns come together of which one denotes a class and the other some members of that class, the former in Latin as well as in English is generally put in the genitive case; e. g.,

Militum quam plurimi interfecti sunt.
Of the soldiers very many were killed.

In Latin, however, instances occur in which the former noun, the noun representing the class, is in the same case as the noun representing the members of the class; e. g.,

Duae filiae, altera occisa, altera capta est;
The two daughters, the one was killed, the other taken.

The two daughters, in English, would be *of the two daughters*. I give another example or two:

Mauri, impetratis omnibus rebus, tres Romam profecti.
The Moors, all things being obtained, three proceeded to Rome.

Duo ad regem redeunt.
Two return to the king.

The Latin, admitting of greater compression of style than the English, sometimes employs, as attributives, nouns or adjectives

in cases where the sense in our language requires some explanatory word or words; e. g.,

C. Junius aedem Salutis, quam *consul* voverat, *censor* locavit, *dictator* dedicavit.

C. Junius, when censor erected, and when dictator dedicated a chapel in honour of Salus, which he had vowed when he was consul.

There are occasions when, in the Latin, the explanatory word is given; e. g.,

Cicero cecinit ea *ut vates*, (Corn. Nep.)
Cicero sang these things as a prophet.

The word on which a genitive depends is sometimes omitted. The omission takes place when the word can be easily supplied from the context. Thus the governing word is left out in a second clause or number of a sentence when it can readily be taken from the previous one; e. g.,

Quum Atheniensium opes senescere, contra Lacedaemoniorum crescere viderent.

When the resources of the Athenians seemed to waste away, those of the Lacedemonians, on the other hand, seemed to increase.

The genitive Lacedaemoniorum depends on opes, understood from the opes which appears in the former part of the sentence. Observe, by the way, that the English requires the leading verb *seemed* to be repeated; whereas the Latin viderent governs both senescere and crescere. This is an advantage which ensues from throwing the verb to the end of the sentence.

The Romans employed adjectives of number, &c. instead of adverbs; e. g.,

Ego primus hanc orationem legi;
I first read that oration.

Where, in the Latin, primus agrees with ego. Here you have a case of agreement, that is, an adjective agreeing with a pronoun, which you should compare with what has been said under the second head of agreement.

Considerable care is necessary to render these instances of idiom correctly; e. g.,

Hanc primam orationem legi.

The words literally rendered are, *I read this first oration*, or *I read this oration first*; neither rendering gives the meaning, which is

This is the first oration which I read.

The pronouns in Latin present many instances of idiom, of which the more simple will be found already explained under the proper heads. Some that may involve difficulty to the student may be here noticed.

The adjective, which in sense belongs to the antecedent, is separated from it, and put after and in concord with the relative; e. g.,

Consiliis pare, *quae* nunc *pulcherrima* Nautes dat.
LIT. *To the counsels yield, which now very beautiful Nautes gives.*
IDIOM. *Obey the very excellent counsels which Nautes now gives.*

Here, in construction, the adjective pulcherrima agrees with the relative quae, whereas in sense it is to be taken as if in concord with the antecedent consiliis. In rendering such passages, the beginner will do well to alter the arrangement so as to make it correspond with the sense before he begins to construe, thus:

Consiliis pulcherrimis pare, quae nunc Nautes dat.

The Romans, fond of the relative, frequently use it when, in English, we employ a demonstrative pronoun, and being also inclined to put together, for the sake of broad contrast, two related words, they in questions place a relative and an interrogative side by side; e. g.,

Quo quid potest esse turpius?
What can be more base than that?

When the relative refers to a fact or a clause of a sentence, it frequently takes before it the demonstrative pronoun, and thus arises the form, id quod; e. g.,

Num me fefellit res tanta, et, *id quod* magis est, admirandum, dies?
You do not think, do you? that so important a fact, and what would be more wonderful, the day escaped my notice?

The pronoun is, ea, id. is used in the sense of our phrases *and that, and that too*; e. g.,

Unam rem explicabo, *eamque* maximam;
One thing I will explain, and that not the least.

The pronoun is, or hic, is often not found in Latin in forms of speech where the English usage would lead you to expect it; e. g.,

Xerxes proposuit praemium qui invenisset novam voluptatem.
Xerxes offered a reward to him who should discover a new pleasure.

Ei (*to him*) would be looked for before qui; its absence is idiomatic.

When the demonstrative is employed, it may stand, not, as in English, *before*, but *after* the relative; e. g.,

Tarquinius non novam potestatem nactus, sed *quam* habebat, *eâ*, usus est injuste.

Tarquin obtained not new power, but he used the power he had unjustly.

Important idiomatic usages are connected with the *Latin participle*. That of the *ablative absolute* has been sufficiently spoken of. Another idiom or two may here be noticed.

The Latin has no *participle perfect active*, corresponding to our *having read*; the meaning may be given by a verb and a conjunction, e. g. *Quum* epistolam *legisset, abiit Cicero. Cicero, having read the letter, departed.* The past participle of deponent verbs has an active signification; e. g,

Cæsar milites *hortatus* castra movit,
Cæsar having exhorted the soldiers, moved his camp.

The participle passive in dus, agrees with the noun or pronoun with which it is connected; e. g.,

Legendi sunt libri,	*books are to be read.*
Causâ legendi libri,	*for the sake of reading a book.*
Ad legendum librum,	*to read a book.*
In legendo libro,	*in reading a book.*
Ad legendos libros,	*to read books.*
In legendis libris,	*in reading books.*

After the verbs curare, dare, sumere, relinquere, &c., this participle is common in a usage which requires attention; e. g.,

Hanc domum aedificandam mihi conduxi;
I have contracted to build this house.

Hanc domum aedificandam tibi locavi;
I have let to thee the building of this house.

The present participle active is used after a verb instead of an infinitive, when it is intended to show that the act is at the moment proceeding; e. g.,

INFINITIVE. Te *ridere* vidi;
I saw thee laugh.
PRES. PART. ACTIVE. Te *ridentem* vidi;
I saw thee laughing.

The force of the participle in rus cannot be given in English, without a circumlocution; e. g.,

Tiberius *trajecturus* Rhenum commeatum praemisit.
Tiberius, when on the point of passing the Rhine, sent before him all his supplies.

The participle perfect passive is used after habeo, teneo, possideo, &c., to give the idea of an act so past as to have become a settled condition; e. g.,

Illud *exploratum habeto*, nihil fieri posse sine causâ.
Account this a settled point, that nothing can take place without a cause.

In sentences constructed in English with two independent verbs, the Latins prefer employing one verb and the passive participle; e. g.,

Dionysius Syracusis expulsus Corinthum se contulit;
Dionysius was expelled from Syracuse and went to Corinth;
or,
When Dionysius was expelled from Syracuse he went to Corinth.

The participles in Latin have sometimes a causal force, which can be fully given in English only by the aid of a conjunction; e. g.,

Nihil affirmo *dubitans* et mihi ipse *diffidens*;
I assert nothing, because I doubt and because I distrust myself.

The passive participle in us, is sometimes used with a noun in such a way as to require to be put into English by a noun; the compound phrase demands two nouns in a state of regimen;

thus, occisus Cæsar; literally, *Cæsar being slain*, must be rendered *the slaying of Cæsar*; e. g.,

Occisus dictator Cæsar aliis pessimum, aliis pulcherrimum facinus videbatur,

The slaying of Cæsar, the dictator, appeared to some a very shameful, to others, a very noble deed.

Hence arise the phrases Post Christum natum; literally, *after Christ born*; that is, *since the birth of Christ*; ab urbe conditâ, *from the foundation of the city* (of Rome).

Exercises—Latin-English.

Cato quem senem cognovi; Sarmatis neque conti, neque gladii, quos praelongos utrâque manu regunt, usui erant; tempestivis conviviis delector cum aequalibus, qui pauci admodum restant; Agamemnon, quum devovisset Dianae quod in suo regno pulcherrimum natum esset, immolavit Iphigeniam; exempla quaeruntur, et ea non antiqua; uno atque eo facili praelio caesi sunt hostes; Galli legionem neque eam plenissimam, propter paucitatem despiciebant; Crassum cognovi studiis optimis deditum, idque a puero; ego unus familiarem tuum vidi; unum familiarem tuum vidi; familiarem tuum vidi solum, sermonem cum eo non habui; non nobis solum nati sumus; Hannibal princeps in proelium ibat, ultimus conserto praelio excedebat; lupus gregibus nocturnus obambulat; hanc orationem primum legi, deinde transcripsi; hodie postremum me vides; Sulla in operibus, in agmine atque ad vigilias multus aderat; Sextus ab armis nullus discedit.

English-Latin.

Religion destroyed, the world is in darkness; the death of thy wife (thy wife dead) has caused thee great pain; the scholars have come to read Cicero; in reading this book, I become learned; by reading the Bible, men become wise; I have engaged thy brother to build me a house (I have let to thy brother a house to be built); it is a settled point with me that nothing takes place without God; being about to visit Rome, I have sent thither some garments; they saw thee laughing; the master saw his scholars reading their books; he entered the town a boy, and left it an old man.

LESSONS IN GEOLOGY.—No. XXXV.

By Thomas W. Jenkyn, D.D., F.R.G.S., F.G.S., &c.

CHAPTER III.

ON THE INFLUENCE OF ATMOSPHERIC AGENTS ON THE EARTH'S CRUST.

SECTION IV.

ON THE EFFECTS OF WINDS ON SURFACE ROCKS.

Winds affect the surface of the earth in many ways, and produce great changes in the physical aspect of rocks. It is by winds that the waves of the sea are impelled against the base of rocky cliffs, both to undermine and to shatter them. Winds exert a great power in driving the moisture of the atmosphere against the sides and into the crevices of cliffs and precipices, to abrade and moulder them. It is also by the agency of winds that many districts of the earth are covered with sandhills and dunes.

Facts of this description show that winds, especially gales and hurricanes, are agents of great geological importance. Their mechanical force, as they rush with impetuosity along the surface of the globe, is enormous. Meteorologists have ascertained, with an approach to accuracy, that some hurricanes travel with a velocity of from eighty to a hundred miles an hour. It seems also that small and confined storms are generally more rapid than those of great magnitude and extent. Sometimes a hurricane is split or divided by a mountain into two separate storms, each of which takes a new course of whirlings and gyrations, and that, sometimes, with increased violence.

The force which we have just described is more than sufficient to level whole forests, to throw down massive buildings, and to hurl to destruction a large amount of animals and human beings. These powerful and terrific agents, in a few hours, convert an extensive district of fertility studded with pastures and villages, into a scene of ruin and wild desolation. Furious torrents of winds will occasionally sweep away a large amount of uprooted trees and dead animals to a considerable distance; and, in other places, scoop out deep ravines in the sandy surface, like the excavating flood of a river. In mountainous districts, gales and hurricanes contribute much to the production of landslips.

This power of the hurricane has been demonstrated in many melancholy instances. In August 1831, the West Indies was visited with a tremendous hurricane. Large edifices and strong buildings were levelled with the earth, and plants and trees, and the bodies of men and animals, were entombed beneath masses of earth, which had been scooped up from one place and spread over another. In Barbadoes, the trees that were not uprooted, were stripped of all their foliage. This sight, of a forest of leafless trees, was a phenomenon strange and quite new, in a tropical climate.

The hurricane of Jamaica, in 1815, brought with it such an enormous quantity of rain, and blew so furiously on the swollen rivers, that the flood of the river Yallahs actually swept away all the fish that were in it, and that so thoroughly, that ten years after, no fresh water fish could be found in the stream.

The geological results of such a hurricane, are worth noticing. The fish of the river would perish in the sea, and their remains would mingle with the shells and exuviæ of marine animals. Thus a large amount of terrestrial animals, and vegetables, in addition to land detritus, would be deposited on the bottom of the sea. Here the bones of men, quadrupeds, birds, land reptiles, fresh water tortoises and crocodiles, might be carried out to sea—some of them, perhaps, devoured by sharks and other sea animals. The river detritus, the sands and the muds of the shallow sea, stirred up by the force of the hurricane and the action of the waves, would combine to entomb in one bed the remains of terrestrial, fluviatile, and marine animals. Should this bed ever be brought up above the waves to be examined by a geologist, it would require considerable skill and caution to account for such a mixture of animal remains. The deposit would have all the appearance of being an estuary bed; but in reality, it is the result of a violent transport into the bed of the ocean.

In tropical climates, especially in the districts of sandy deserts, whirlwinds are frequent. In the deserts of Arabia, several whirlwinds, or groups of whirlwinds, are often seen at the same time. The different whirlwinds are of all magnitudes, from a few feet to some hundred yards in diameter. They occur in all kinds of weather, by night and by day, and frequently without the smallest notice. In their movements over the ground, they uproot trees, throw down houses, raise up sands in clouds, or in columns that move about like waterspouts, and then overwhelm whole caravans of men and beasts, and cover a fertile district with sand-floods.

The principal design of this lesson is to illustrate the agency of winds in covering the surface of the earth with sand.

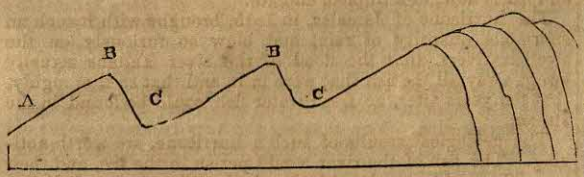
The subject of dunes has already been mentioned in Lesson xxviii. where they were represented solely as examples of the reconstructive agency of the ocean. Your observation was, in that lesson, limited to dunes of sand as formed on sea coasts, and as tending to encroach on fertile lands and human habitations. In the phenomena of dunes, the sand at the bottom of shallow seas was considered as being first disturbed by the action of the waves, and then propelled and driven on the shore, by the combined impetuosity of the breaking billows, and the furious gale. Our present lesson is on the influence of the wind in spreading these sands over the earth, so as to form extensive and increasing deserts.

Sand hills generally commence by clouds of fine sand being blown so as to cover the shore until they meet with some check from shingle or shrubs, when it is formed into a ridge, and eventually into a series of ridges. Each ridge has one side slightly inclined upwards, and the other steep. The windward side has a gentle slant, and the lee side is always steep and almost abrupt. The mode of advance in these sandhills is effected by the continued drifting of grains of sand up the windward slope. Many of the grains, when they reach the top of the slope, fall over the scarp, and are sheltered from the wind, while others are driven far over the scarp to form the commencement of another sloping ridge.

These inclined slopes on the windward sides of dunes and sandhills, and the steep slant on the lee side are represented in fig. 76. The wind is represented to be blowing from A towards B. It first pushes the sand up the inclined side of

the hill, and then drives it over the scarp from B to C. The sands which find shelter between B and C remain stationary for some time, but the grains which have been driven over the scarp B, are again blown up to the scarp of a next hill, and so on from one hill to another in succession. In this manner a series of sandhills is formed, at first, and then all the sandhills are put in motion, according to the force and the constancy of the winds, and the dunes advance at the rate of sixty and seventy feet per annum.

Fig. 76.



The formation and the advance of Sandhills and Dunes.

The phenomena of moving sandhills, or, as they are sometimes called sand floods, may be advantageously studied on many parts of the coasts of Portugal, France, Belgium, Holland, and England, where there are numerous villages that are almost, or entirely, overwhelmed and entombed by the advance and encroachment of sand drifted by strong winds.

Some of the best examples of the operations of sandfloods are to be seen in Morayshire, in the north of Scotland. There, to the west of the river Findhorn, was once a fertile district ten miles square, which was called the granary of Moray; but it has been, for nearly two centuries, inundated with sand floods driven by the east winds, so as to be now a sandy desert. Of these sands a great quantity was driven to the river Findhorn, which bore it down to its junction with the sea, where the sands form so firm a bar as to prevent the stream from entering the ocean. The river was then obliged to cut for itself a new channel, and the people of Findhorn had to remove their town from the east side to the west bank of the stream. Even to this day, the sands, borne down by the river, form so high a bar as to prevent the entrance of large vessels.

In another part of Scotland, along the west coast of the outer Hebrides, the bottom of the sea appears to consist of sand, with a few interruptions of rugged rocks. These sands are constantly drifting, so as to submerge a large tract of good land under sand hills. These sands consist chiefly of shattered and comminuted shells, apparently of the same species as now live in the neighbouring sea. The sand is, of itself, rather coarse, but such is the action of high and furious winds upon it, that by rubbing the particles of it against each other, a sort of small and almost impalpable dust is formed, which at a distance resembles a cloud of smoke. In this form, it is frequently seen driven upwards of two miles into the sea, where it descends like a thin white fog.

Cuvier, in his "Theory of the Earth" has shown that in districts much exposed to certain prevalent winds, the advance of these sandhills before strong gales and hurricanes is irresistible. He mentions that, in his day, there were ten villages on the shores of the Bay of Biscay that were threatened with destruction. It seems that one of these villages, Mimisan, has been for more than twenty years striving against the encroachment of sand dunes, and that, in its neighbourhood, one sandhill in particular, which was more than sixty feet high, might be almost said to be seen to advance. Their progress not only drives lakes backwards upon cultivated fields and villages, but it also changes the course of rivers. He supposes that, if they travel at their present rate of about twenty yards per annum, they will reach and overwhlem Bourdeaux in two thousand years.

The grand theatre for witnessing the effects of wind in the production of sandstorms and sandfloods, is some extensive sandy desert that covers some thousands of square miles on the surface of the globe. Such a theatre is presented in that trackless ocean of sand, called the Sahara desert towards the northern part of Africa. This sandy waste covers an area of about eight hundred thousand square miles, extending almost from the Nile to the Atlantic. Its sandhills not only reach the Atlantic, but they are prolonged even to the bed of that ocean, where they form sand banks composed of grains driven to the sea by the powerful east winds, which blow in that district for nine months in the year.

At the equinoxes, these easterly winds blow into a hurricane, take up immense bodies of sand, and drive them along in clouds so thick as, at midday, to produce the darkness of night, represented in fig. 76. but upon a scale immensely large. The sand is heaped up in waves and ridges like those The very atmosphere itself is sand, and the sandy waves are driven onward with fearful rapidity, till whole caravans, that travel in their line, are overwhelmed and destroyed by them. During such a sandstorm, the heated air is like red vapour, and the setting sun looks like a volcanic fire. Some parts of these deserts have large and shallow salt lakes; other portions are plains covered over with thick incrustations of dazzling salt. The particles of this salt are taken up by the whirlwind, borne aloft by the gale, and flash in the sun like diamonds.

The effects of the encroachment of drifted sand, contemplated upon an extensive scale, are well developed in the changes which have taken place in the physical conformations of the Land of Egypt. It is well known that fertile districts of this country, lying to the west of the river Nile have been extensively invaded by sterile sands, which have been driven upon them from the deserts of Libya by strong westerly and north-westerly winds.

The sands drifted from Libya have already destroyed a great number of cities, once very celebrated in Egypt, such as Abydos, Memphis, Bahnasa, and a whole tract of country from Saccara to Abu Rehe. The ruins of some of these towns and villages are still to be seen. These inundations of sand have taken place even since the conquest of the country by the Mohammedans, for the summits of the minarets of some of their mosques are seen projecting out of the sands. In walking over these sandy wastes, and striking our foot against the pinnacle of some house or temple, it is melancholy to reflect that you are treading on what was once a scene of high cultivation and flourishing villages.

M. Denon has remarked that, were it not for a ridge of mountains called the Libyan Chain, which borders the west bank of the Nile, and forms, in the parts where it rises, a barrier against the invasion of sand, the shores of the river on that side would long ago have ceased to be habitable.

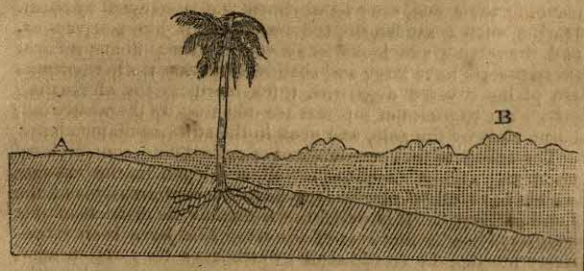
Some scientific writers have, with Sir. G. Wilkinson, asserted that the annual increase of the alluvium of the Nile was gaining ground on the western sands; but Capt. Newbold has demonstrated that upon the whole the encroachment of the sands is increasing. This advancement of the sands was naturally to be expected, when we consider that the westerly and north-westerly winds blow during nearly nine months in the year, which incessantly drift the sands from Libya towards Egypt; and that since the age of the Pharaohs, the artificial checks opposed to the progress of sandhills by certain plants and other means, have been greatly diminished by the want of industry, agriculture and population. But the most satisfactory proof of this encroachment of the sand upon cultivation, is the fact that, both in Upper and Middle Egypt, trees appear to grow out of the sandy waste; but, as they are traced downwards, their roots are always found embedded in the sediment once deposited by the Nile and now covered by drifted sand, as represented in fig. 77.

The progress of the sands as indicated by this tree is further proved by several facts. Not only have many buildings of ancient Egypt been overwhelmed, but even ruins, that have been partially cleared, are again much covered with sand. The great Temple of Abusambel, discovered by Burckhardt was almost buried with sand drift to a great depth. Belzoni cleared away thirty-one feet of this deep drift to enable him to arrive at the entrance. Since then the sand has commenced to reinvest it. The great Sphinx which, thirty years ago, was disinterred from sand in which it was buried up to the neck, is again covered up to the shoulders. Plains and even mountains near the ancient town of Dimay, have been overwhelmed with vast mounds of sand. Every traveller can almost see its advance on Koum Omboo, Benisuef, and Tapta. Also on the steep ridges, on the western side of Fayoom, it has drifted so much as to cover extensive ranges of the desert mountains to such a

depth, that only their summits and a few of their craggy pinnacles are visible above the undulating waste.

In the course of centuries these blown sandfloods will materially alter the aspect of the valley of the Nile. So long as the prevailing winds blow from the north and the north-west, or until the supply of sand in the Libyan desert be diminished or become exhausted, the western parts of this valley must suffer from sand drifts. There are two or three physical circumstances that are likely to tend to retard this encroachment. The surface of the Libyan desert is very rugged, having many

Fig. 77.



A Tree imbedded in A, *the Alluvium of the Nile, covered by* B, *the Drifted Sand.*

deep ravines and abrupt cliffs. At the depth of these hollows, and checked by these almost vertical cliffs, the sand collects and is detained for an indefinite period; and in this manner, furnishes a barrier against its own progress. As powerful gales drive the sand towards the east, the escarpment of the hills on the east side of the river prevent its further progress in that direction, and causes much of it to fall into the stream of the Nile, which carries off the lighter particles towards the sea. The heavier particles of the sand falling to the bottom, tend to raise the bed of the river, which will cause the waters to extend their alluvium further and wider, until it encroaches, as it actually does in many places, upon the drifting sand.

I shall close this lesson by relating a few very curious phenomena that have resulted, in the surface of the earth, from the combined actions of wind and sand.

Near Messina, in Sicily, drifted and loose sands have become so indurated as to supply a good quarry of building stones. Several portions of this mass have been excavated for this purpose. But the excavations which are made by the quarrymen are, in the course of some years, again filled with sand which the winds drift into them. This sand becomes consolidated, and is also, in its turn, quarried for building materials.

On the coast of the Great Canary, there is a remarkable formation of limestone and sandstone, that is the result of wind action. Between the town and Isleta, the ground abounds with light fragments of broken shells, and comminuted and rounded grains of the basalt and trachyte rocks of the island. The violent winds of the north, take up these particles, drive them over the narrow tongue of land of Guanateme, so as form dunes of from thirty to forty feet high. The water behind these dunes acts upon the sand, and unites it into a compact mass. During the greater part of the year, this water is 77° Fahr.—a temperature which greatly promotes its action on the calcareous particles. The sandstone is a real oolite, like Bath stone. Most of the grains composing the stone are round and calcareous; the calcareous matter surrounding a nucleus of trachyte, basalt, or a diminutive fragment of a shell.

At the Cape of Good Hope, a little to the east of Simon's Town, there is a large sand bank rising from the sea, to the height of a hundred feet. This sand hill is composed of broken shells and grains of sand, and is formed by having been thrown up by the south-east wind. In this sand hill there are numerous cylindrical bodies, which have much the appearance of bones that had been long bleached by the atmosphere. Many of them throw out branches like those of a shrub, or small tree. Some of them, plant-like, rise out of the surface soil, as if they were so many vegetating bones actually in a state of growth, and putting forth branches that ramify from a stem beneath, that is thicker than themselves.

This is curious enough: but it is more curious still, to find that these sandy bones turn out to be real and true vegetable plants. They are very rarely solid. Their centres are either hollow, or are filled up with a granular matter that is of a blackish colour. The form of these blackish granular particles is that of the oolite, or Bath stone. The outer crust of these cylinders is composed chiefly of a large proportion of sand, and a small amount of calcareous matter supplied by shattered shells. In many of the larger specimens, the incrustation contains fragments of iron stone, and pieces of quartz about an inch square.

That these ramifying cylinders are real incrustations of plants that have decayed in consequence of being incrusted with blown sand, is proved by the different degrees of change that has taken place in the internal parts of different specimens. In some the organized tissue of the plant remains sufficiently distinct to verify its vegetable nature. The nearer you go to the sea, the more instances will you see of the different stages of the incrustation. You may see the very commencement of it taking place in some of the large fuci, or sea-weeds, which strew the shore.

Vegetable substances in similar situations were found to have undergone similar changes by M. Peron, in Australia. He thinks that the matter of the sea shells has been chemically decomposed, and that then it forms a cement with the sand; that the vegetable matter of the plant also becomes altered, and is finally replaced by the sand with which the different winds have invested it. The process leaves nothing to show its origin but its plant-like form.

In one part of this lesson, I mentioned that at the Hebrides, clouds of impalpable sand dust were driven, in the form of white smoke, some two miles into the sea. This appearance is witnessed in many parts of the world. In the heated districts bordering the Red Sea and the Nile, numerous little whirlwinds take up a large quantity of the finer superficial sands of the desert, and even small marine, land, and fluviate shells, and seeds of plants, which they transport and distribute in all directions. In the Red Sea, the deck and shrouds of vessels are sometimes found covered with fine sand blown from the Egyptian desert. There is no doubt that these impalpable sands are transported completely over the gulf of Suez, even so far as the groups of the Sinai mountains. This will probably account for the singular musical sounds which are heard on the western slope of the mountain of the Bell, near Sinai. It arises from the motion which the wind gives to the fine sands which covers the sides of that mountain. The sound is thus accounted for by Seetzen and Ehrenberg. Mr. Darwin mentions a similar phenomenon in Northern Chili at a mountain called El Bramador.

LESSONS IN ARITHMETIC—No. XXVII.

Coins, Weights and Measures.

In our last lesson, we gave a full account of the acts of Parliament which produced the change in our weights and measures during the second quarter of the present century. Subsequent to the passing of these acts, other two acts were passed, one in 1834, and another in 1835. The object of the former act was to legalize the use of weights and measures *differing in shape from the models* proposed in the acts cited in our last lesson, and to abolish the *use of Heaped measure*, besides making better arrangements for carrying the provisions of the said acts into effect. In this act, the use of the stone of *fourteen pounds Avoirdupois* was fully recognised, and that of *eight pounds Avoirdupois*, which had been used in London, was abolished. The distinction between Avoirdupois weight and Troy weight was also recognised and allowed; the latter being employed in the sale of gold, silver, platina, and precious stones, as well as in the sale of drugs by retail. Sales by the Winchester bushel and the Scotch ell were declared illegal, and liable to fine and confiscation. Power was given to inspectors of weights and measures; verification of these enforced; forms of convictions for infraction of the act given, and penalties appointed; and lastly, a schedule of fees for examining, comparing and stamping weights and measures, appointed for the United Kingdom.

In the subsequent act, of 1835, that of 1834 was repealed, and new provisions were made instead thereof. These pro-

visions, however, as far as the standard weights and measures are concerned, were essentially the same as before; but some latitude was allowed for the sale of articles in vessels not represented to the purchaser as imperial measures. *Heaped measure* was still abolished; but *sale by weight* was permitted instead; and in the article of coal it was especially enforced. The stone of *fourteen pounds* Avoirdupois was also recognised in preference to any other weight, and considered as Imperial. Weights made of lead or other soft materials were strictly abolished; the mode of appointing inspectors was prescribed, and penalties for the infraction of the new regulations were appointed. The powers and duties of inspectors were more clearly defined, the mode of defraying their expenses appointed, and forms of suing for penalties prescribed. A new schedule of fees for examining, comparing and stamping was given, and the whole act was made more imperative than any of the former acts. It is under this act that we now carry on the daily transactions of business throughout the United Kingdom; and with the exception of *Heaped measure*, which is abolished, and the sale of coal, culm, &c. *by weight*, which is enforced, every thing remains the same as given in our last lesson.

The loss of the Standard Weights and Measures by the burning of the Houses of Parliament in 1834, occasioned the appointment of a Royal Commission "to consider the steps to be taken for the restoration of the Standards of Weights and Measures." The report of this Commission was presented to both Houses of Parliament by command of the Queen in 1841; and since that period, we believe nothing has been done to affect the operation of the act of Parliament of 1835, relating to the use of our present weights and measures. In this report, the Commissioners describe the state of the Standards recovered from the ruins of the House of Commons, as ascertained by their inspection of them, made 1st June 1838, and declare that the legal Standard yard referred to in preceding acts is, for the purposes of comparison, completely destroyed; that the legal Standard Troy pound is lost; and that steps must be taken for making and legalising new Standards of length and of weight.

The commissioners next declare their entire disapproval of the methods appointed in the acts of Parliament for the restoration of these standards; they then suggest that copies be made of accurate existing copies of the original standards; that these be legalised as the true standard of weights and measures; and that no reference be made to any natural basis or standard, such as the pendulum, in future. They recommend that the standard of weight be made a certain piece of metal or other durable substance; that the standard of capacity be defined by the *capacity* [that is, the *vessel*], which, under certain circumstances of the barometer and thermometer, contains a certain weight of distilled water; but that it be in no way defined by reference to the standard of length.

The commissioners also recommend that the *Avoirdupois pound*, of 7000 grains, be adopted instead of the *Troy pound*, of 5,760 grains, as the *standard of weight;* and that no change be made on the standard of length, viz. the *Imperial yard*. They also recommend that no standard of capacity be constructed; but that the definition of the *Imperial gallon*, as the capacity [or vessel] which contains *ten pounds* [Avoirdupois] weight of distilled water weighed in air at the temperature of 62° Fahrenheit, the barometer being at 30 inches, be retained.

The next subject of recommendation which the commissioners take up, is the general question of the introduction of the *Decimal Scale* into the moneys, weights and measures of this country. On this subject we entirely differ from the said commissioners, and from several eminent scientific men who have expressed their opinions repeatedly in public. We confess that, at one period of our life, we were converts to this new-fangled doctrine of the *first* French Revolution; and we thought, of course, that because men had *ten* fingers, and *ten* toes, there was a *double reason* for adopting the *decimal* system of division; but we have seen the folly of this; and notwithstanding the upstart pride of the present age, we do believe that age gives wisdom, and that the hoary head is a crown of glory, if it be found in the way of righteousness. If we are to be ruled in this matter by numbers, the *doubles*, or the *binary system*, will have the preference; for men have *two* legs, *two* feet, *two* arms, *two* hands, *two* eyes, *two* ears, *two* cheeks *two* nostrils, *two* jaws; and almost every organ in the body is *two*-fold. Besides, there are *two* sexes in the whole of the animal and vegetable world; and numerous transactions in the sale of articles are conducted by *pairs*. Nevertheless, independently of these considerations, we find that, in actual business, almost every thing is measured by halves, quarters, eighths and sixteenths, not to speak of the parts below these, proceeding according to the same law of progression; when we wish to ascend the scale, we go on doubling, quadrupling, octupling, &c. that is, doubling every time till we reach the number or quantity to which we desire to attain. The *binary system* then seems to be the most natural, if we attend to the actual practice of mankind. In this, of course, we speak of weights, measures, and coins, in their actual use in business. Thus, in coins, we have the sovereign, the half-sovereign or angel, the quarter-sovereign or crown, and the eighth of a sovereign or the half-crown; next, the shilling, the half-shilling or sixpence, and the quarter-shilling or three-pence, with the double shilling or florin; to this might be added, for the *convenience of the community*, the quadruple shilling or double florin, which would be the four-shilling piece. It is true that the *florin* was coined with the view of introducing the *decimal system* into our coinage, because it is the *tenth part* of a pound or sovereign. It is most probable that we owe this change to the suggestion of the commissioners; for they say, "We beg leave to invite the attention of the Government to the advantage and facility of establishing in this country a decimal system of coinage. In our opinion, no single change which it is in the power of a Government to effect in our monetary system, would be felt by all classes as equally beneficial with this, *when the temporary inconveniences attending the change had passed away.** The facility consists in the ease of interposing between the sovereign (or pound) and the shilling a new coin equivalent to two shillings (to be called by a distinctive name), of considering the farthing (which now passes as the $\frac{1}{960}$th part of a pound) as the $\frac{1}{1000}$th part of that unit; of establishing a coin of equal value to the $\frac{1}{100}$th part of the pound; and of circulating, besides these principal members of a decimal coinage, other coins of values bearing a simple relation to them, including coins of the same value as the present shilling and sixpence. No circumstance whatever would contribute so much to the introduction of the decimal scale in weights and measures, in those respects in which it is really useful, as the establishment of a decimal coinage."

If the recommendations made in the preceding extract, which, as we have seen are partially adopted in the introduction of the *florin* into our currency, we should have some of the strangest anomalies to contend with that ever yet attended a change in our moneys, weights and measures. The coin answering to the *hundredth part of a pound* would be in value $2\frac{2}{5}d.$ that is, *two-pence* and *two-fifths of a penny*. Now, supposing that this coin, which of course would be *one-tenth of a florin*, were introduced, and called, in imitation of the French, the *Deciflorin*, not one person in a thousand would know its real value, although we have just stated it correctly above; and most people would be dreadfully puzzled and annoyed to get at the real value of any number of these new coins. The following table will show the labour of conversion from the one scale to the other, and the consequent difficulties which the public should have to contend with.

Deciflorins or *Tenths of Florins.*	*Values in our present coin.*		
	sh.	d.	far.
1	0	2	$1\frac{1}{5}$
2	0	4	$3\frac{2}{5}$
3	0	7	$0\frac{4}{5}$
4	0	9	$2\frac{3}{5}$
5	1	0	0
6	1	2	$1\frac{2}{5}$
7	1	4	$3\frac{1}{5}$
8	1	7	$0\frac{4}{5}$
9	1	9	$2\frac{3}{5}$
10	2	0	0
11	2	2	$1\frac{2}{5}$
12	2	4	$3\frac{1}{5}$
&c.		&c.	

* The italics are ours; but the public will do well to pause on the inconveniences.

The next difficulty would be the material of which this coin should be made; if it were made of *copper*, each *deciflorin* would be rather more than double the weight of a *penny*, and a given number of *deciflorins*, would, of course, weigh more than *double* that number of pence in the pocket. This would not answer our fine ladies and gentlemen, who love pence, although they affect to despise the trouble of carrying them. Again, if it were made of *silver*, it would be nearly *one-third* smaller than our present *threepenny* pieces, and would accordingly become a most unhandy coin, slipping through the fingers, disappearing through small holes in the pocket, and when dropped, lost, from its smallness of size, in the twinkling of an eye. Silver *two*-penny pieces, and even *one*-penny pieces have been coined, but only as matters of curiosity; and these *deciflorins* would become the same, inasmuch as the people would prefer the old pence to which they had been accustomed, or fall upon some substitute to avoid the inconvenience of the government money. Moreover, after all the attempts to introduce a decimal coinage the public would grumble until they got the binary system introduced in some shape or the other; so that we should have *double deciflorins, quadruple deciflorins, octuple deciflorins, &c.* as well as *half deciflorins, quarter deciflorins, and half-quarter deciflorins*; the values of these would be as follows:—

New Coins.	*Values.* s.	d.	far.
Octuple deciflorin	1	7	0 $\frac{4}{5}$
Quadruple deciflorin	0	9	2 $\frac{2}{5}$
Double deciflorin	0	4	3 $\frac{1}{5}$
Deciflorin	0	2	1 $\frac{3}{5}$
Half deciflorin	0	1	0 $\frac{4}{5}$
Quarter deciflorin	0	0	2 $\frac{2}{5}$
Half-quarter deciflorin	0	0	1 $\frac{1}{5}$

The commissioners also propose to reckon every farthing the *tenth part of a deciflorin*, which, in imitation of the French, might be called a *centiflorin*. By this scheme, *forty-farthings*, or *ten-pence*, would be lost by the government, or by the holders of the old coin, *on every pound*; that is, *four-farthings*, or *one penny*, on every *florin*. The blunders, mistakes and complaints which this equalization of the coin would occasion look small upon paper, but it would be found to be large in practice; and could only be adjusted by calling in the old coinage and issuing a new one, giving the holders of the old full value in the new for their money. In issuing this new farthing coinage there would require to be some coins also adapted to the binary system; for instance, we should require, *double centiflorins, quadruple centiflorins*, and octuple centiflorins; the values of these would be as follows:

New Coins.	*Values.* s.	d.	far.
A centiflorin	0	0	2 $\frac{4}{5}$
A double centiflorin	0	0	1 $\frac{3}{5}$
A quadruple centiflorin	0	0	3 $\frac{1}{5}$
An octuple centiflorin	0	1	3 $\frac{2}{5}$

We need hardly make any additional observations on the very awkward and untoward circumstances in which the new coinage would thus place the country.

In commenting upon the subject of the decimal scale, our pupils will find that the remarks we have made are not uncalled for, when they read the following admissions made by the commissioners themselves: "With regard to the decimal system in general, we think it undesirable to enforce it exclusively on all parts of the various scales of weight and measure even were the attempt likely to be attended with fewer difficulties than would be experienced in this country. In our opinion, the scale of binary subdivision is well adapted to the small retail transactions which seldom become the subject of written accounts, and which constitute a large part of the daily transactions in every country."

Before proceeding farther with our observations on the proposed changes in our Coins, Weights and Measures, we shall now lay before our readers a popular view of their actual state at present, with some practical notes on their past state, for the purposes of comparison.

STERLING MONEY

English or sterling money means the "money current with the merchants" of Great Britain and Ireland.

Money of Accounts.

2 Farthings ($\frac{1}{2}d.$)	make	1 Halfpenny,	marked	$\frac{1}{2}d.$
4 Farthings	,,	1 Penny	,,	1*d.*
12 Pence	,,	1 Shilling	,,	1*s.*
20 Shillings	,,	1 Pound	,,	£1.

Current Money.

Farthings, halfpence, pence, shillings, and pounds, are our standard coins; the pound-coin being called a sovereign. The following are also in daily use:

3 Pence	make	1 Threepenny, or quarter-shilling.
4 Pence	,,	1 Fourpenny, or groat.
6 Pence	,,	1 Sixpence, or half-shilling.
2 Shillings	,,	1 Florin, or double shilling.
2½ Shillings	,,	1 Half-crown, or half-quarter sovereign.
5 Shillings	,,	1 Crown, or quarter-sovereign.
10 Shillings	,,	1 Half-sovereign, or angel.
20 Shillings	,,	1 Sovereign, or Gold Victoria.

Other coins besides these were formerly in use. The guinea, worth 21 shillings; the half-guinea, 10½ shillings; the 7 shilling-piece; the noble, 6s. and 8d.; the mark, 13s. and 4d.; the pistole, 16s. and 10d.; and the moidore, 27s.

The characters £. *s.* and *d.* are the initials of the Latin words *Libra, Solidus*, and *Denarius*, which respectively signify *Pound, Shilling*, and *Penny*.

TROY WEIGHT.

Troy weight is used by goldsmiths and apothecaries, but their sub-divisions of the ounce are different.

Goldsmiths' Weight.

24 Grains (grs.)	make	1 Pennyweight,	marked	dwt.
20 Pennyweights	,,	1 Ounce,	,,	oz.
12 Ounces	,,	1 Pound	,,	lb.

Hence, this pound contains 5760 grains, and the ounce 480 grains. The Troy pound, though lost, is still the standard weight of the empire.

Apothecaries' Weight.

20 Grains (grs.)	make	1 Scruple	marked	℈
3 Scruples	,,	1 Dram	,,	ʒ
8 Drams	,,	1 Ounce	,,	℥
12 Ounces	,,	1 Pound	,,	lb.

Apothecaries and chemists use this weight in mixing medicines, making experiments, &c.; but they buy and sell by Avoirdupois Weight.

AVOIRDUPOIS WEIGHT.

Avoirdupois Weight is sometimes called Grocers' (*Grossier, Fr.*) Weight, because large articles of trade are weighed by it. The pound avoirdupois is larger than the pound troy, and weighs 7000 troy grains, by legal enactment. This weight is so extensively used in all the commercial transactions of the empire, that it may be properly called the Imperial Weight. It is differently divided in some parts of the country, and for some particular purposes. The following is the usual division:—

Grocers' Weight.

16 Drams	make	1 Ounce	marked	oz.
16 Ounces	,,	1 Pound	,,	lb.
14 Pounds	,,	1 Stone	,,	st.
2 Stones, or 28 pounds		1 Quarter hundred-weight	,,	qr.
4 Stones, or 56 pounds		1 Half hundred-weight		½ cwt.
8 Stones, or 112 pounds		1 Hundred-weight	,,	cwt.
20 Hundred-weight	,,	1 Ton	,,	ton.

In weighing coals, it is of importance to observe that a sack now weighs, in London, 2 hundredweight, or 224 lbs.; and a ton, ten sacks, or 2240 lbs. Half a sack, of course, weighs 112 lbs.

(*To be continued.*)

LESSONS IN FRENCH.—No. LXV.

By Professor Louis Fasquelle, LL.D.

LIST OF IRREGULAR VERBS, &c. (*continued from page* 208).

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
Méprendre, 4. (se) *to mistake.* ref.	se méprenant mépris, *f.* e.	j. m. méprends *see* PRENDRE	j. me mépre- [nais	je me mépris	je me mépren- [drai	je me mépren- [drais	méprends-toi	j. me mépren- [ne	je me mépris- [se
Mettre, 4. *to put* aux. avoir irregular.	mettant mis, *f.* e.	je mets tu mets il met n. mettons v. mettez ils mettent	je mettais tu mettais il mettait n. mettions v. mettiez ils mettaient	je mis tu mis il mit n. mîmes v. mîtes ils mirent	je mettrai tu mettras il mettra n. mettrons v. mettrez ils mettront	je mettrais tu mettrais il mettrait n. mettrions v. mettriez ils mettraient	mets q. mette mettons mettez q. mettent	je mette tu mettes il mette n. mettions v. mettiez ils mettent	je misse tu misses il mît n. missions v. missiez ils missent
Moudre, 4. *to grind* aux. avoir irregular.	moulant moulu, *f.* e.	je mouds tu mouds il moud n. moulons v. moulez ils moulent	je moulais tu moulais il moulait n. moulions v. mouliez ils moulaient	je moulus tu moulus il moulut n. moulûmes v. moulûtes ils moulurent	je moudrai tu moudras il moudra n. moudrons v. moudrez ils moudront	je moudrais tu moudrais il moudrait n. moudrions v. moudriez ils moudraient	mouds qu'il moule moulons moulez q. moulent	je moule tu moules il moule n. moulions v. mouliez ils moulent	je moulusse tu moulusses il moulût n. moulussions v. moulussiez ils moulussent
Mourir, 2. *to die* aux. être irregular.	mourant mort, *f.* e.	je meurs tu meurs il meurt n. mourons v. mourez ils meurent	je mourais tu mourais il mourait n. mourions v. mouriez ils mouraient	je mourus tu mourus il. mourut n. mourûmes v. mourûtes ils moururent	je mourrai tu mourras il mourra n. mourrons v. mourrez ils mourront	je mourrais tu mourrais il mourrait n. mourrions v. mourriez ils mourraient	meurs q. meure mourons mourez q. meurent	je meure tu meures il meure n. mourions v. mouriez ils meurent	je mourusse tu mourusses il mourût n. mourussions v. mourussiez ils mourussent
Mouvoir, 3. *to move* aux. avoir irregular.	mouvant mu, *f.* e.	je meus tu meus il meut n. mouvons v. mouvez ils meuvent	je mouvais tu mouvais il mouvait n. mouvions v. mouviez ils mouvaient	je mus tu mus il mut n. mûmes v. mûtes ils murent	je mouvrai tu mouvras il mouvra n. mouvrons v. mouvrez ils mouvront	je mouvrais tu mouvrais il mouvrait n. mouvrions v. mouvriez ils mouvraient	meus q. meuve mouvons mouvez q. meuvent	je meuve tu meuves il meuve n. mouvions v. mouviez ils meuvent	je musse tu musses il mût n. mussions v. mussiez ils mussent
Mouvoir, (se) 3. *to move* reflective.	se mouvant mu, *f.* e.	je me meus *see* MOUVOIR	j. me mouvais	je me mus	je me mouvrai	je me mouv- [rais	meus-toi	je me meuve	je me musse
Naître, 4. *to be born* aux. être irregular.	naissant né, *f.* e.	je nais tu nais il naît n. naissons v. naissez ils naissent	je naissais tu naissais il naissait n. naissions v. naissiez ils naissaient	je naquis tu naquis il naquit n. naquîmes v. naquîtes ils naquirent	je naîtrai tu naîtras il naîtra n. naîtrons v. naîtrez ils naîtront	je naîtrais tu naîtrais il naîtrait n. naîtrions v. naîtriez ils naîtraient	nais q. naisse naissons naissez q. naissent	je naisse tu naisses il naisse n. naissions v. naissiez ils naissent	je naquisse tu naquisses il naquît n. naquissions v. naquissiez ils naquissent
Négliger, 1. *to neglect*	négligeant négligé, *f.* e.	je néglige § 49, (1.)	je négligeais	je négligeai	je négligerai	je négligerais	néglige	je néglige	je négligeasse
Neiger, 1. *to snow.* unip.	neigeant neigé	il neige	il neigeait	il neigea	il neigera	il neigerait	q. neige	qu'il neige	q. neigeât
Niveler, 1. *to level*	nivelant nivelé, *f.* e.	je nivelle *see* APPELER	je nivelais § 49, (4.)	je nivelai	je nivellerai	je nivellerais	nivelle	je nivelle	je nivelasse
Nuire, 4. *to injure*	nuisant nui	je nuis *see* CONDUIRE	je nuisais	je nuisis	je nuirai	je nuirais	nuis	je nuise	je nuisisse
Obtenir, 2. *to obtain*	obtenant obtenu, *f.* e.	j'obtiens *see* TENIR	j'obtenais	j'obtins	j'obtiendrai	j'obtiendrais	obtiens	j'obtienne	j'obtinsse
Offrir, 2. *to offer*	offrant offert, *f.* e.	j'offre *see* OUVRIR	j'offrais	j'offris	j'offrirai	j'offrirais	offre	j'offre	j'offrisse
Oindre, 4. *to anoint*	oignant oint	j'oins *see* CEINDRE	j'oignais	j'oignis	j'oindrai	j'oindrais	oins	j'oigne	j'oignisse
Omettre, 4. *to omit.*	omettant omis, *f.* e.	j'omets *see* METTRE	j'omettais	j'omis	j'omettrai	j'omettrais	omets	j'omette	j'omisse
Ouïr, 4. *to hear.* def.	ouï, *f.* e.	j'ouïs il ouït							j'ouïsse il ouït
Ouvrir, 2. *to open* aux. avoir irregular.	ouvrant ouvert, *f.* e.	j'ouvre tu ouvres il ouvre n. ouvrons v. ouvrez ils ouvrent	j'ouvrais tu ouvrais il ouvrait n. ouvrions v. ouvriez ils ouvraient	j'ouvris tu ouvris il ouvrit n. ouvrîmes v. ouvrîtes ils ouvrirent	j'ouvrirai tu ouvriras il ouvrira n. ouvrirons v. ouvrirez ils ouvriront	j'ouvrirais tu ouvrirais il ouvrirait n. ouvririons v. ouvririez ils ouvriraient	ouvre q. ouvre ouvrons ouvrez q. ouvrent	j'ouvre tu ouvres il ouvre n. ouvrions v. ouvriez ils ouvrent	j'ouvrisse tu ouvrisses il ouvrît n. ouvrissions v. ouvrissiez ils ouvrissent
Paître, 4. *to graze* aux. avoir defective	paissant pû	je pais tu pais il pait n. paissons v. paissez ils paissent	je paissais tu paissais il paissait n. paissions v. paissiez ils paissaient		je paîtrai tu paîtras il paîtra n. paîtrons v. paîtrez ils paîtront	je paîtrais tu paîtrais il paîtrait n. paîtrions v. paîtriez ils paîtraient	pais q. paisse paissons paissez q. paissent	je paisse tu paisses il paisse n. paissions v. paissiez ils paissent	
Parfaire, 4. *to complete*	parfaisant parfait, *f.* e.	je parfais *see* FAIRE	je parfaisais *seldom used*	je parfis	je parferai	je parferais	parfais	je parfasse *obsolete*	je parfisse
Paraître, 4. *to appear*	paraissant paru	je parais *see* CONNAÎTRE	je paraissais	je parus	je paraîtrai	je paraîtrais	parais	je paraisse	je parusse
Parcourir, 2 *to go through*	parcourant parcouru, *f.* e.	je parcours *see* COURIR	je parcourais	je parcourus	je parcourrai	je parcourrais	parcours	je parcoure	je parcourusse
Partir, 2. *to depart*	partant parti, *f.* e.	je pars *see* SENTIR	je partais	je partis	je partirai	je partirais	pars	je parte	je partisse

List of Irregular Verbs, &c., continued.

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
PARVENIR, 2. *to succeed, &c*	parvenant	je parviens	je parvenais	je parvins	je parviendrai	je parviendrais	parviens	je parvienne	je parvinsse
	parvenu, *f.* e.	*see* TENIR							
PAYER, 1. *to pay*	payant	je paie	je payais	je payai	je paierai	je paierais	paie	je paie	je payasse
	payé, *f.* e.	*see* APPUYER	§ 49, (2.)						
PEINDRE, 4. *to paint*	peignant	je peins	je peignais	je peignis	je peindrai	je peindrais	peins	je peigne	je peignisse
	peint, *f.* e.	*see* CEINDRE							
PELER, 1. *to peel*	pelant	je pèle	je pelais	je pelai	je pèlerai	je pèlerais	pèle	je pèle	je pelasse
	pelé, *f.* e.	§ 49, (5.)							
PERMETTRE, 4. *to permit*	permettant	je permets	je permettais	je permis	je permettrai	je permettrais	permets	je permette	je permisse
	permis, *f.* e.	*see* METTRE							
PLAINDRE, 4. *to pity*	plaignant	je plains	je plaignais	je plaignis	je plaindrai	je plaindrais	plains	je plaigne	je plaignisse
	plaint, *f.* e.	*see* CEINDRE							
PLAINDRE, (se) 4. *to complain.* reflec.	se plaignant	je me plains	je me plai- [gnais	je me plaignis	je me plain- [drai	je me plain- [drais	plains-toi	je me plaigne	je me plai- [gnisse
	plaint, *f.* e,								
PLAIRE 4. *to please* aux. avoir irregular.	plaisant	je plais	je plaisais	je plus	je plairai	je plairais	plais	je plaise	je plusse
	plu	tu plais	tu plaisais	tu plus	tu plairas	tu plairais	q. plaise	tu plaises	tu plusses
		il plait	il plaisait	il plut	il plaira	il plairait	plaisons	il plaise	il plût
		n. plaisons	n. plaisions	n. plûmes	n. plairons	n. plairions	plaisez	n. plaisions	n. plussions
		v. plaisez	v. plaisiez	v. plûtes	v. plairez	v. plairiez	q. plaisent	v. plaisiez	v. plussiez
		ils plaisent	ils plaisaient	ils plurent	ils plairont	ils plairaient	q. pleuve	ils plaisent	ils plussent
PLEUVOIR, 3. *to rain.* unip.	pleuvant	il pleut	il pleuvait	il plut	il pleuvra	il pleuvrait		q. pleuve	q. plût
	plu								
POINDRE, 4. *to dawn.* def.		il point			il poindra	il poindrait			
POURSUIVRE, 4. *to pursue*	poursuivant	je poursuis	je poursuivais	je poursuivis	je poursuivrai	je poursuivrais	poursuis	je poursuive	je poursuivis- [se
	poursuivi, *f.* e	*see* SUIVRE							
POURVOIR, 3. *to provide* aux. avoir irregular.	pourvoyant	je pourvois	je pourvoyais	je pourvus	je pourvoirai	je pourvoirais		je pourvoie	je pourvusse
	pourvu, *f.* e.	tu pourvois	tu pourvoyais	tu pourvus	tu pourvoiras	tu pourvoirais	pourvois	tu pourvoie	tu pourvusses
		il pourvoit	il pourvoyait	il pourvut	il pourvoira	il pourvoirait	q. pourvoie	il pourvoies	il pourvût
		n. pourvoyons	n. pourvoyions	n. pourvûmes	n. pourvoirons	n. pourvoirions	pourvoyons	n. pourvoyions	n.pourvussions
		v. pourvoyez	v. pourvoyiez	v. pourvûtes	v. pourvoirez	v. pourvoiriez	pourvoyez	v. pourvoyiez	v. pourvussiez
		ils pourvoient	i.pourvoyaient	ils pourvurent	ils pourvoiront	i pourvoiraient	q. pourvoient	ils pourvoient	ils pourvussent

FABLES.

LE LOUP DÉGUISÉ.

Un loup, la terreur d'un troupeau, ne savait (*savoir*, 3. *ir.*) comment faire pour attraper des [S. 10. 3.] moutons; le berger était continuellement sur ses gardes. L'animal vorace s'avisa de se déguiser [§ 43, (6.)] de la peau d'une brebis qu'il avait enlevée [§ 134, (4.)] quelques jours auparavant. Le stratagème lui [S. 26.], réussit pendant quelque temps; mais enfin, le berger découvrit l'artifice, agaça les chiens contre lui; ils lui [S. 26.] arrachèrent la toison de dessus les épaules, et le mirent (*mettre*, 4. *ir.*) en pièces.

Ne vous fiez pas toujours à l'extérieur. Un homme de jugement et de pénétration ne juge pas selon les apparences.—*Perrin.*

LE BERGER ET LE TROUPEAU.

Quand vous voyez quelquefois un nombreux troupeau qui, répandu sur une colline vers le déclin d'un beau jour, paît (*paître*, 4. *ir.*) tranquillement le thym et le serpolet, ou qui broute dans une prairie une herbe menue et tendre qui a échappé à la faux du moissonneur, le berger, soigneux et attentif, est debout auprès de ses brebis; il ne les perd pas de vue, il les suit (*suivre*, 4. *ir.*) il les conduit, il les [S. 26. 7.] change de paturage; si elles se dispersent, il les rassemble; si un loup avide paraît, il lâche son chien qui le met en fuite; il les nourrit [S. 86.] il les défend; l'aurore le trouve déjà en pleine campagne, d'où il ne se retire qu'avec le soleil. Quels [§ 30, (10.)] soins! quelle vigilance! quelle servitude! Quelle condition vous paraît la plus délicieuse et la plus libre, ou du berger, ou des brebis? Le troupeau est-il fait pour le berger, ou le berger pour le troupeau? Image naïve [S. 11. 5.] des peuples, et du prince qui les gouverne, s'il est bon prince.—*La Bruyère.*

LE PAYSAN ET LA COULEUVRE.

Un paysan, allant au bois avec un sac pour y [§ 39, (18.)] mettre des noisettes (c'était [S. 81. 1.] la saison), trouva une couleuvre. Ah! ah! dit le manant, je te tiens (*tenir*, 2. *ir.*) à présent; tu ne m'échapperas pas: tu viendras (*venir*, 2. *ir.*) dans ce sac et tu mourras (*mourir*, 2. *ir.*) L'animal pervers (je veux dire [S. 31. 5.] la couleuvre, et non pas l'homme), lui dit: qu'ai-je fait pour mériter un pareil traitement?—Ce que tu as fait? Tu es le symbole de l'ingratitude, le plus odieux de tous les vices.—S'il faut (*falloir*, 3. *ir.*) que les ingrats meurent, répliqua hardiment le reptile, vous vous condamnez vous même: de tous les animaux l'homme est le plus ingrat.—L'homme! dit le paysan, surpris de la hardiesse de la couleuvre; je pourrais (*pouvoir*, 3. *ir.*) t'écraser dans l'instant, mais je veux (*vouloir* 3. *ir.*) m'en rapporter à quelque juge.—J'y consens [§ 39, (18.)] Une vache était à quelque distance: on [§ 41, (4.) (5.)] l'appelle, elle vient (*venir*, 2. *ir.*); on lui propose le cas.—C'était bien la peine de m'appeler, dit-elle, la chose est claire; la couleuvre a raison. Je nourris l'homme de mon lait; il en fait du beurre et du fromage; et pour ce bienfait, il mange mes enfants. A peine sont-ils nés (*naître*, 4. *ir.*) qu'ils sont égorgés [§ 134, (2.)] et coupés en mille morceaux. Ce n'est pas tout: quand je suis vieille, et que je ne lui donne plus de lait, l'ingrat m'assomme sans pitié; ma peau même n'est pas à l'abri de son ingratitude; il la tanne et en fait des bottes et des souliers. De là, je conclus que l'homme est le vrai symbole de l'ingratitude. Adieu; j'ai dit ce que je pense.

L'homme, tout étonné, dit au reptile; je ne crois pas ce que cette radoteuse a dit; elle a perdu l'esprit: rapportons-nous en à la décision de cet arbre.—De tout mon cœur.—L'arbre étant pris pour juge, ce fut bien pis encore.—Je mets l'homme à l'abri, [S. 68. 1.] des orages, de la chaleur, et de la pluie. En été, il trouve sous mes branches une ombre agréable; je produis des fleurs et du fruit; cependant, après mille services, un manant me fait tomber à coups de hache: il coupe toutes mes branches, en fait du feu, et réserve mon corps, pour être scié en planches. L'homme se voyant ainsi convaincu: je suis bien sot, dit-il, d'écouter [S. 20. 2.] une radoteuse et un jaseur. Aussitôt il foula la couleuvre aux pieds et l'écrasa.

Le plus fort a toujours raison, il opprime le plus faible. La force et la passion sont sourdes à la voix de la justice et de la vérité.—*Perrin.*

LE SINGE.

Un vieux singe malin étant mort, son ombre descendit dans la sombre demeure de Pluton, où elle demanda à retourner parmi les vivants. Pluton voulait [§ 119.] la renvoyer dans le corps d'un âne pesant et stupide, pour lui ôter sa [21, (2.)] souplesse, sa vivacité, et sa malice. Mais elle fit tant de tours plaisants et badins, que l'inflexible roi des enfers ne put [§ 138, (2.)] s'empêcher de rire, et lui laissa le choix d'une condition. Elle demanda à entrer dans le corps d'un perroquet.—Au moins, disait-elle, je conserverai par là quelque ressemblance avec les hommes que j'ai longtemps imités. Etant singe je faisais des gestes comme eux; et, étant perroquet, je parlerai avec eux dans les plus agréables conversations

A peine l'ombre du singe fut introduite dans ce nouveau métier qu'une vieille femme cau-euse l'acheta. Il fit (*faire*, 4. *ir.*) ses délices; elle le mit dans une belle [L. 11. 6.] cage. Il faisait bonne chère, et discourait toute la journée avec la vieille radoteuse, qui ne parlait pas plus sensément que lui. Il joignit (*joindre*, 4. *ir.*) à son nouveau talent d'étourdir tout le monde je ne sais (*savoir*, 3, *ir.*) quoi de son ancienne profession. Il remuait sa tête ridiculement, il faisait craquer son bec, il agitait ses ailes de cent façons, et faisait de ses pattes plusieurs tours qui sentaient encore les grimaces de Fagotin. La vieille prenait à toute heure ses lunettes pour l'admirer; elle était bien fâchée d'être un peu sourde, et de perdre quelquefois des paroles de son perroquet, auquel elle trouvait plus d'esprit qu'à personne. Ce perroquet gâté, devint bavard, importun, et fou. Il se tourmenta si fort dans sa cage, et but (*boire*, 4. *ir.*) tant de vin avec la vieille, qu'il en mourut.

La voilà revenu devant Pluton, qui voulut (*vouloir*, 3. *ir.*) cette fois le faire passer dans le corps d'un poisson. Mais il fit (*faire*, 4 *ir.*) encore une farce devant le roi des ombres; et les princes ne résistent guère [S. 16. 5.] aux demandes des mauvais plaisants qui les flattent. Pluton accorda donc à celui-ci, qu'il irait (*aller*, 1. *ir.*) dans le corps d'un homme; mais comme le dieu eut honte [S. 20, (4.)] de l'envoyer dans le corps d'un homme sage et vertueux, il le destina au corps d'un harangueur ennuyeux et importun, qui mentait, qui se vantait sans cesse, qui faisait des gestes ridicules, qui se moquait de tout le monde, qui interrompait toutes les conversations les plus polies et les plus solides, pour dire rien, ou les sottises les plus grossières. Mercure qui le reconnut [S. 50.] dans ce nouvel état, lui dit en riant.—Ho! ho! je te reconnais; tu n'es qu'un composé du singe et du perroquet que j'ai vus [S. 41. 7.] autrefois. Qui [§ 39, (5.)] t'ôterait tes gestes et tes paroles apprises par cœur sans jugement, ne laisserait rien de toi. D'un joli singe et d'un bon perroquet on n'en fait qu'un sot homme.—*Fenélon.*

LESSONS IN MECHANICS.—No. XIX.

ROAD-MAKING AND PUBLIC WORKS—(*continued*).

It has been remarked to Mr. Blackwell, to whom we are indebted for most of the statistics in our last number, that the causes of the remarkable increase in the manufacture of iron are traceable to the demand made by the rapid expansion of all our arts and manufactures, to improve machinery and apparatus, and to the vast and almost inexhaustible supplies of coals and iron our mineral fields contain. As regards the two first, this country only possesses them in common with the world at large; but as regards the last, it possesses a marked pre-eminence, the United States alone being able to bear any comparison as regards the area of coal and iron fields, but possessing no argillaceous ironstone, which exists in this country in such abundance, alternating with beds of coal in our coal-fields, so that coal and ore are constantly obtained together at the same working.

This proximity exists in no other country. In the Great Exhibition there were 400 specimens of the argillaceous ironstones of England, while the only other country that possessed any specimens was the United States, and those amounted only to three or four. Besides the argillaceous ironstone, there are carbonaceous deposits of iron ore peculiar to this country; and the "blackband" ironstones of Scotland, Northumberland, North Staffordshire, and South Wales, are unknown elsewhere, and these supply nine-tenths of the iron produced. The quantity of iron produced is—in Scotland, 775,000 tons; South Wales, 700,000; South Staffordshire and Worcestershire, 600,000; Shropshire, 90,000; North Staffordshire, 55,000; Yorkshire and Derbyshire, 105,000; North Wales, 28,000; Forest of Dean, 26,000; Whitehaven, 12,500; Northumberland, 90,000.

The ironstones are divided into two classes: the argillaceous ironstones, and the blackbands or the carbonaceous ironstones. The former consists of oxide of iron, alumina, silica, manganese, soda, potash, phosphoric acid, titanium, crystals of nickel, zinc, copper, and lead, the quality varying according to the predominance of any of these components. The cost of raising this class of ores is greater than any other, being from 4s. to 9s. a ton; but from their superior quality and proximity to coal, they are extensively used. The second class, the blackband or carbonaceous ironstones, are not so varied, and owing to their general thickness, are raised at 1s. 6d. to 2s. a ton. The two principal constituents of blackbands are oxide of iron and carbonic acid, silica and alumina existing only in a small proportion. The iron they produce has a greater tendency to "cold-shortness" than any other class, owing to the phosphoric acid it contains, and are best adapted for foundry purposes, for which indeed Scotland is pre-eminent. The localities in which it exists are Scotland, Northumberland, North and South Wales, North Staffordshire, parts of South Staffordshire, and the Clee Hills.

A Mr. Muskett is said to have been the discoverer of the blackbands in Scotland, and of the power of using it in blast furnaces, by means of the hot blast, which was a new era in iron manufacture.

In some districts beds of coal sometimes change into beds of blackband ironstone, and Mr. Blackwell remarks that "the extent of deposits of ironstone alternately with beds of coal may be gathered from the fact that the entire area of the coal-fields of England, Wales, and Scotland is estimated at 5,768 square miles. Although in some of the coal-fields the argillaceous ironstones do not exist in quantities sufficient to enable them to be worked, yet they are part of our iron manufacturing resources, since that fuel is required for the carboniferous oolitic beds."

After the coal measures the most important iron ores are the hæmatites, or red oxides, the chief deposits of which are found in Lancashire, in the Forest of Dean. This class has been worked at an early period, and, though not rich as a class, is, from its large masses, produced at a low cost of 2s. or 3s. a ton. Some of the hæmatites in the northern districts are considered the finest quality in the kingdom, and are largely shipped, while the large per centage of iron they contain, 60 to 65 per cent., render them of great importance. This ore is found also in Scotland, Somersetshire, Devon, and the Isle of Man, but has been worked only to a limited extent. There is also a valuable class of these ores, the "brown hæmatites" of Durham, similar to those used in Belgium, which is little used, owing to the deficiency of means of transport. This country is by no means rich in the micaceous iron ores of the northern countries of Europe and the United States, which are considered the finest class of iron ore known, although some of them exist to a small extent in Dartmoor and other parts of Devon. Of pure white carbonate the Sparms'iron of the German mineralogist is found to exist in West Somersetshire.

The next class of ores, the discovery of which marked a new epoch in the iron trade, and which has occurred simultaneously with the development of facilities of transport by railway, are those which occupy a position at the base of the oolitic formation, which commence on the east coast of this island from the south bank of the river Tees to Scarborough, stretching through Yorkshire, Lincolnshire, Rutlandshire, Northamptonshire, Oxfordshire, and Dorsetshire, to Lyme Regis, where, being turned aside by the granite formations of Devon, it is prolonged into France. It was first worked at Middlesborough in the north, where two or three years ago a deposit of iron was discovered by a workman, and the bed of which was found to be 15 feet thick, and to contain 30 per cent. of iron, and could be raised at a less cost than the blackbands of Scotland. Its character is peculiar, being in parts of a greenish blue colour, and in others of a brownish tinge; and, from its peculiar qualities, it can be produced at 3s. to 3s. 6d. a ton. The existence of this oolitic formation in Northamptonshire has been long known; but it was only till after the Exhibition of 1851 that its real value was ascertained. The supply of this ironstone for all practical purposes will be inexhaustible for a long series of years, and is found to be most valuable for mixing with the argillaceous stones of South Staffordshire, which could not otherwise have long maintained its manufacture of pig iron.

THE MANUFACTURE OF IRON.

We may now turn our attention to the manufacture of the ore into iron, and the subsequent change which it is made to undergo before it is ready for use. The ordinary method of manufacturing iron is as follows:—

First of all, the ore is made into heaps with coal, and thoroughly roasted. The result of this process discharges the water and carbonic acid, and a porous mass of impure oxide of iron remains, with all the earthy matter incapable of being volatilised. The next point is to get rid of the oxygen which forms the oxide, and also to separate the earthy matter from the ore. In order to rid the ore of the oxygen, it is placed in a furnace with lime and charcoal burning at a white heat; the charcoal rapidly consumes the oxygen, and the lime, melting the earthy matter of the ore, causes it to rise in a thick scum to the surface. The molten iron, freed from oxygen and earthy matter, is run off in a glowing stream from the bottom of the furnace; the scum, or slag, is run off from the top, and utilised, while fresh charcoal and lime are continually added to increase the fervour of the furnace. In our blast furnaces coke is used instead of charcoal.

Formerly nearly all our iron came from Russia and Sweden. We had no means of supplying, as have those heavily wooded countries, the quantities of charcoal supposed to be necessary for its preparation. Hence the importance of the discovery—usually ascribed to Mr. Cort—of employing coke in that process, and of puddling the iron in the method already described.

At best the process of puddling—actually by manual labour stirring up the melted iron with a long pole, and thus exposing it to the action of the atmosphere—is clumsy. It was suggested by

Mr. James Nasmyth that it might be abolished by forcing strong jets of steam into the molten iron from below, and thus keeping it in agitation, as a troubled sea.

However well this method might succeed, that of Bessemer appears to us to be still more useful. Bessemer's process is just the very opposite of Nasmyth's. Instead of jets of steam, he says throw in jets of cold air—precisely the thing that is really required. The following description of the process will afford the best idea of its utility:—"Connect with the blast furnace a large cupola furnace, lined with fire bricks, to be the refining pot; in the bottom of it let there be the openings of pipes through which blasts of air can be forced; have a tap-hole, stopped with loam, through which the metal can be poured out at the fitting time; and a hole, half way up, by which through a trough, bringing it from the blast furnace, the cast iron can pour in a white hot torrent. Establish the blast first, then put the torrent in. The air leaps up through it, dashes it up and down, and mingling with the metal, ultimately gives up its oxygen to the carbon, which begins to burn. Flame, mixed with some bright sparks, rises through the furnace mouth. The combustion is attended with increase of heat, and, the heat being generated in the interior of the mass and dispersed through it in innumerable fiery bubbles, most of it is absorbed by the metal, of which the temperature is thus very quickly raised. In a quarter of an hour or twenty minutes all the carbon which has been mixed only mechanically with the iron is consumed; the temperature of the molten iron has, in the meantime, risen to so high a point that the carbon chemically combined with it bursts from its old state to burst into flame with the oxygen. The metal now rises above its former level, and a light, frothy slag makes its appearance, and is thrown out in foamy masses. This eruption lasts five or six minutes, and then ceases. A steady and powerful flame now burns, indicating, after the period when impurities could be no longer retained, a constant combustion of the carbon, and consequent decrease of its quantity, the heat of the entire mass all the while rising. The temperature is so great that oxide of iron, as fast as it forms, fuses, and so forms a solvent of the earths that have to be got rid of; the sulphur is burnt off, and by the violent ebullition, the whole mass is in this way thoroughly cleaned."

Bessemer's process is, without doubt, an immense improvement on that of the old method of puddling, and will in time be generally adopted.

ANSWERS TO CORRESPONDENTS.

CHEMIE.—Articles on Light, which will be included in our papers on Natural Philosophy, will supply the information you require. It would be well for you to read Robert Hunt's book on Light.

W. R. (Dublin).—Alto-relievo is an Italian phrase, signifying high relief; it describes that kind of sculpture which is executed on a flat surface, but which stands out considerably above that surface. Bas-relief, or basso-relievo, signifies low relief—a style of sculpture in which the figures project but slightly from the plain surface. The mediæval style of architecture means that which prevailed in Europe during the Middle Ages. Our "Lessons on Arithmetic" will be as complete as they can possibly be made; you will find the information all in good time.

A STUDIOUS YOUTH.—The following are the Civil Service regulations regarding clerks in the Custom House. The extreme limits of age of applicants are fixed at sixteen and twenty-five, except in the case of extra clerks and officers promoted to the establishment, who may be admitted up to the age of forty, provided they were first employed before they were five-and-twenty. The qualifications are good handwriting, correct orthography, arithmetic (including vulgar and decimal fractions), English composition, geography, English history, and translation of Latin. Your handwriting is, in our opinion, sufficiently good for the purpose. We are glad to hear of the progress you have made in French.

W. G. L.—We have received your interesting letter, and shall be glad to hear your method of ascertaining the true time. For the encouragement of other scholars, we insert a portion of your letter on how you came to learn Latin:—"Last winter I was at school, learning navigation. When I had advanced so far as to find the latitude by a meridian altitude of a star, I found that the stars were represented by the letters of the Greek alphabet being prefixed to the names of the constellations in which the stars were situated. Thus, Aldebaran was marked *a* Tauri, and Pollux ζ Geminorum. I observed that in the above cases the names of the constellations did not spell exactly in the same way that they spelt in the list of the names of the constellations given at the beginning of the rules for finding the latitude by the meridian altitude of a star. In the list of the names of the constellations, the names of the two constellations already mentioned spelt T-a-u-r-u-s and G-e-m-i-n-i; where, in the case of a Greek letter being prefixed, the words spelt T-a-u-r-i and G-e-m-i-n-o-r-u-m. I was perfectly well acquainted with the names of the signs of the Zodiac, and their signification in English, but did not know that in Latin they spelt differently, when forming the subject of a proposition, from what they spelt when forming the object. I inquired of the teacher what the reason was that Pollux was marked ζ Geminorum, and Regulus *a* Leonis, instead of ζ Gemini and *a* Leo. The teacher told me that the words were in the genitive case. 'The genitive case!' said I; 'do Latin nouns in the genitive case have a different ending from what nouns in the nominative case have?' 'Oh, yes,' replied the teacher; 'did you ever see the rudiments of the Latin language?' 'No,' I replied, 'I never did.' The teacher immediately brought me the rudiments, which showed me that there were six cases in Latin, where there were only three in English, and that nearly every case had a different ending. I saw a corresponding difference in the ending of the verbs for every person, mood, and tense. This excited my curiosity, and at once I commenced learning Latin. I had only learned the first two or three declensions of the nouns when I had to leave school. A friend of mine had some volumes of the POPULAR EDUCATOR, which he had purchased at the time of its first issue. He showed me what excellent lessons in Latin they contained, and how easily one might learn Latin with no other help than that obtained from those lessons."

L. F. B.—The mode of admission into Christ's Hospital is as follows:—Boys whose parents may not be free of the City of London are admissible on free presentations, as they are called, as also are the sons of clergymen of the Church of England. The Lord Mayor has two presentations annually, and the Court of Aldermen one each. The rest of the governors have presentations once in three years. A list of the governors who have presentations for the year is printed every Easter, and may be had at the counting-house of the hospital. No boy is admitted before he is seven years old, nor after he is nine; and none, King's boys and Grecians excepted, can remain in the school after fifteen.

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LESSONS IN NATURAL HISTORY.—No. XXXIII.

THE GIBBON—THE SIAMANG, &c.

To some of the quadrumana, the name of Gibbo, or Gibbon, an Indian appellation, has been applied. This species is distinguished by the enormous length of the arms, which when the animal stands erect, very nearly touch the ground. The eyes are large and deeply seated in the head. The nose is flat; the ears are not unlike the human. There is a circle of gray hairs passing over the eyes, the cheeks, and under the lower jaw, which completely surrounds the visage, and gives a very singular appearance to the animal. The hair also on the back of the hands and feet, is gray; in all other parts of the animal it is black, and so is the colour of the skin. The gibbon has not been found exceeding four feet in height.

This species is said to be gentler in disposition than those already described. Its motions are neither rude nor precipitate. Its food, which consists chiefly of fruits, is received without greediness or impatience. It is most commonly found on the coasts of Coromandel, in the peninsula of Malacca, and in the Molucca isles. It suffers much from cold and a low temperature, and seldom survives a long removal from its native country.

One species, the siamang, is very common in Sumatra. These animals are generally found assembled in large troops, conducted, it is said, by a chief, which the natives consider to be invulnerable. Assembled at sunrise and again at sunset, they vie with each other in uttering the most dreadful cries, stunning even to those accustomed to them, and in the highest degree alarming to strangers. The noise they make is owing to a guttural cavity, for which some of the monkey tribes are remarkable, and this one in particular.

The Gibbon.

The Douc.

At other times, so long, at least, as they continue undisturbed they are perfectly quiet. They seem to want courage for climbing and activity for leaping, and they might therefore be easily captured. They are, however, peculiarly vigilant, and thus escape dangers into which they would otherwise fall.

Contrary to the practice of some other monkeys, a wounded companion, however numerous the troop, is immediately abandoned. If it be young, the contrary is the case on the part of the mother, which, in the strength of her affection, will throw away her own life in a desperate yet ineffectual attack on the enemy.

The siamang is easily reconciled to bondage, and becomes, in a very few days, as indifferent as it was wild. It never displays the familiarity of other monkeys. Generally squatting down enveloped in its long arms, and with its head brought down between its legs,—the position in which it sleeps—it passes the greater part of its time in sullen retirement. It only breaks silence by a noise like that of the turkey, which appears to be uttered without a cause. It even partakes of its food with apathy, and submits to its being taken away with scarcely an effort to retain it. It drinks by plunging its fingers into water, and then sucking them.

The active and agile gibbon is a native of Sumatra, where it was discovered by the late Sir T. S. Raffles. Such is said to be its activity that it escapes pursuit with the rapidity of a bird upon the wing, repeatedly launching itself from bough to bough, at the distance of twenty feet asunder, apparently without either effort or fatigue. If, however, this statement be considered as exaggerated, we may still infer from it, that the swinging leaps of these animals are truly surprising. They usually live in troops, or families, guided by a leader, and their cries, particularly at the dawn of day, may be heard resounding through the

recesses of their native forests. Some species frequent the mountain districts, their range being limited by the forests of fig-trees, beyond which they do not ascend. On the appearance of man, they retreat with celerity to the densely wooded valleys, and are soon lost in the obscurity of their forest home.

The first specimen brought to England was an adult female, which had previously lived for four years in captivity at Macao. A large space, with a tree full of branches, was netted off for her accommodation, and the ease and velocity of her movements instantly struck every visitor. Using her hands in alternate succession, she launched herself from bough to bough with admirable grace and address, and whether the one aimed at was higher or lower than that left, it was attained with the same facility; the gibbon exhibiting an air of nonchalance, as if the feat were of the most trifling nature. Distances of twelve and eighteen feet were thus cleared, and she kept up the succession of launches not only without intermission, but for a great length of time. Her flight might even be described as aerial; she seemed but to touch the branches with her hands, the impetus being acquired during the momentary hold; and it could not be doubted that, if the animal had enjoyed the liberty of her native forest, distances far exceeding eighteen feet would have formed no interruption to her progress.

It was curious to observe how abruptly she could stop in her most rapid flight, when her momentum was raised to the highest, and it might naturally have been supposed that a gradual cessation of velocity would be required. But, sudden as thought, she stopped her motion by seizing a branch with one hand, and with a rapid and energetic movement raising up her body, and grasping the branch with her hind hands, the creature sat, in a moment, at pleasure, quietly gazing on the astonished spectators who witnessed her extraordinary gymnastics.

With the same abruptness she was accustomed to throw herself into action. Her knowledge of distance, and her calculation of the degree of muscular effort required to clear spaces differing in degree were very surprising; and it may admit of a question how far experience was combined with instinct in rendering her so perfect in her gymnastic exercises. It was easy to see that when a bough at the distance of eighteen feet had to be attained, the effort was more energetic than when a branch only six or eight feet distant was aimed at; and as if she knew that the muscular exertion must, in every instance, be proportionate to the distance, she never over-calculated her launch nor missed her aim, either by under calculating the space to be cleared, or by not summoning sufficient energy. She possessed great quickness of eye, as well as instantaneous agility. She was often tried with apples and other fruits to which she was partial; these were thrown at her so as to pass only near her, with as much rapidity as a skilful arm could exert. But she would catch them without an effort, and with the utmost composure; nor when sham throws were made by her keeper pretending to throw, and then after several feints really throwing the fruits, was she the least discomposed, or ever failed to catch them. Another instance of quickness of sight, precision and activity is still more remarkable. A live bird was set at liberty in her apartment, she marked its flight, made a long swing to a distant branch, caught the bird with one hand in her passage, and attained the branch with her other hand, her aim, both at the bird and the branch, being as successful as if one object only had employed her attention. It may be added as curious, that she instantly bit off the head of the bird, picked its feathers, and then threw them down without attempting to eat it.

While exerting her feats of agility, the gibbon ever and anon uttered her loud call notes, consisting of the syllables *oo-ah, oo-ah*, in a graduated succession of half-tones, ascending in the scale till an exact octave was attained, when a rapid series of descending notes producing a shake, followed. The quality of these notes, though their loudness was deafening, was not unmusical, and during their execution, the lips of the gibbon vibrated and her whole frame quivered.

The Douc or Cochin China Monkey, partakes of the appearance of the monkey in the length of its tail; of the baboon in its size; and of the ape, in the flatness of its face. It has, besides, a very particular character, by which it seems to fill up the chasm between the monkey and the callitrix or green monkey. The douc resembles the latter in the flatness of its snout, but it is more nearly allied to the monkey than the callitrix, by the length of its tail and by other essential characters.

LESSONS IN BOOKKEEPING.—No. III.

INTRODUCTION.

3. When a Merchant buys Goods of a dealer *on Credit*, he becomes the *Debtor*, and the Dealer becomes the *Creditor*. The quantity and the value of the Goods are accordingly entered in the Merchant's books to his own *debit*, that is, on the *Dr. side* of the *Account* of the *Goods* in the *Ledger*; the quantity and the value of the Goods, or at least their value, is also entered in the Merchant's Books to the Dealer's *credit*, that is, on the *Cr. side* of the *Dealer's Account* in the Ledger. The very reverse of this would take place in the Dealer's books, supposing they were kept on the same system as the Merchant's books. Let us illustrate this rule by an example: On the 20th February 1863, I, a Cotton Merchant, bought of James Smith, a Cotton Dealer,* 15 bags of Cotton, weighing Net 4319 lbs. at 7½ per lb. Discount 1½ per cent. for 1 month, value £132 18s. 11d. Here, the first entry of this transaction would be in the *Day-Book*, or *Goods Bought Book*, as follows:—

February 20th, 1863.		Dr.			Cr.		
COTTON Dr. To JAMES SMITH.		132	18	11			
Bot. 15 Bags, Net 4319lbs. at 7½ per lb.							
Discount 1½ per cent. for 1 month					132	18	11

The second entry would be made in the *Journal* or *Month Book*, which would be similar to the preceding in effect, but different and somewhat abridged in form, as in the example given in our last lesson. The third entry would be made in the Ledger twice, in the following forms:—

(*Folio* 3.) (*Folio* 3.)

Dr.		COTTON ACCOUNT.						Cr.		
1863										
Feb.	20	To JAMES SMITH ...		132	18	11				

* This name is given merely for the sake of distinction.

(*Folio* 4.) (*Folio* 4.)

Dr.	JAMES SMITH.				Cr.		
	1863						
	Feb.	20	By COTTON ...		132	18	11

When the Merchant pays the value of the Goods which he bought on credit in money or in bills, the nature of the transaction is completely reversed; the Dealer is now considered to become the *Debtor*, and the Merchant to become the *Creditor*; on the business principle formerly mentioned, viz. that a person is *debtor* for what he *receives*, and *creditor* for what he gives away. The value of the goods thus paid is then entered in the Merchant's books to the Dealer's *debit*, that is, on the *Dr. side* of the *Dealer's Account*; and also, to the Merchant's *credit*, that is, on the *Cr. side* of the *Merchant's Account* of money or bills. In this manner, the transaction is settled between them, and the accounts so far as regards the two parties are balanced.

These explanations are equally applicable to transactions of a more complicated nature, if it once be clearly understood in these transactions *who* are the *Debtors* and *who* are the *Creditors*, and *why* they are so. The object of making entries in a Merchant's books in the manner above described, that is, under the *Personal Accounts* (of the customers or dealers), and under the *Fictitious Accounts* (of the Goods bought or sold), is to avoid the continual repetition of the Merchant's own name in his own books as a *Debtor* or *Creditor*. By this method also, a very important end is gained, viz. that of keeping a distinct account of all the various kinds of property which belong to him, or which pass through his hands in the course of his transactions in business. Hence, the universal rule, which cannot be too often repeated, that the *Article* received by a Merchant is always made *Debtor* in his Books to the *Person* from whom it was received; and the *Person* who receives an *Article*, or to whom it is given, is always made *Debtor* to the *Article* which he has received, or which has been given to him. This is invariably the practice in keeping books by *Double Entry*, whether the *article* received or given be Goods, *Cash* or *Bills*.

This principle, moreover, is extended to such mercantile transactions as the *Purchase* and *Sale* of *Stock*, either in the Government Funds or in the funds of Public Companies; the effecting of *Insurances* on Goods, either for export or import; the settlement of *Profits and Losses*; and the engagement in *Speculations* or *Adventures* of any kind, whether they relate to Shipments or Consignments to foreign markets, to the import of foreign produce, or to the purchase of large quantities of Goods at home, in the expectation of a sudden rise in their price. Separate Accounts are usually opened in the *Ledger* for all transactions of the latter class, in order that the Merchant may distinctly ascertain the actual amount of his gain or loss on each Speculation or Adventure, as well as on all other accounts of property or business of every kind. Hence, the Accounts opened in the Ledger kept by Double Entry, are generally of three kinds, namely, *Personal Accounts*, *Property Accounts*, and *Profit and Loss Accounts*. The *Personal Accounts* are, strictly speaking, the only *real Accounts*, being the Accounts of the *Persons* who transact business of any kind with the Merchant. The *Property Accounts* are the Accounts of the different kinds of Property belonging to a Merchant, those in which he usually deals or effects business transactions; in short, those by which he ultimately expects not only to make a livelihood, but to be able to retire with a decent competency, if not a fortune; these accounts constitute the staple commodity of his business. The *Profits and Loss Accounts* are the Accounts of *Charges*, *Interest*, *Discount*, and *Expenses* of every kind which add to or subtract from the profits of his business; and the accounts of *Speculations* and *Adventures* by which extraordinary profits are expected to be made, but which often terminate in extraordinary loss, and sometimes in the actual ruin of the Merchant.

From our previous explanations, the general rules for finding the *Debtor and Creditor* are in some measure anticipated. Nevertheless, we shall here arrange them in a more formal manner, in order to assist the learner:—

1st. A Personal Account is *debited* (made *Debtor*) to a Property Account, when a Person receives property from you, or when you send it to his order.

2nd. A Personal Account is *debited* to a Profit and Loss Account, when you incur Expenses for him, or transact Business on his Account, (as Agent or otherwise), for which you are to receive Commission, &c.; and when Shipments or Consignments are made to a person either as Principal or Agent.

3rd. A Personal Account is *credited* (made *Creditor*) by a Property Account, when you receive Property from a Person, or when he sends it to your order.

4th. A Personal Account is *credited* by a Profit and Loss Account, when a Person incurs Expenses for you or transacts business on your Account (as Agent or otherwise) for which he is to receive Commission, &c., and when Shipments or Consignments are made to you, either as Principal or as Agent.

5th. A Property Account is *debited* to a Personal Account when you receive Property from a Person, or when he sends it to your order.

6th. A Property Account is *credited* by a Personal Account when a Person receives Property from you, or when you send it to his order.

7th. A Profit and Loss Account is *debited* to a Personal Account, when a Person incurs Expenses for you, or transacts Business on your Account, (as Agent or otherwise), for which he is to receive Commission, &c.

8th. A Profit and Loss Account is *credited* by a Personal Account when you incur Expenses for a Person, or transact Business on his Account.

9th. A Profit and Loss Account is *debited* to a Property Account when Property is risked in a Speculation or Adventure.

10th. A Profit and Loss Account is *credited* by a Property Account, when the returns of a Speculation or the net proceeds of an Adventure are received.

11th. A Property Account is *debited* to a Profit and Loss Account, when the returns of a Speculation, or the net proceeds of an Adventure are received.

12th. A Property Account is *credited* by a Profit and Loss Account, when Property is risked in a Speculation or Adventure.

13th. The Profit and Loss Account, specially so denominated, is *debited* to a Personal or Property Account for any loss which occurs in business.

14th. The Profit and Loss Account, so called, is *credited* by a Personal or Property Account for any gain which arises in business.

The converses of the two preceding rules are so obvious, that we leave them to the ingenuity of our pupils; it is quite possible that a teacher may sometimes explain too much, and thus give his pupils no opportunity of exerting their powers of thought. We have often erred in this respect ourselves. We shall conclude this lesson with an old rhyme, which, to a certain extent, includes the preceding rules:—

"By Ledger laws, what I receive
Is *Debtor* made to those who give;
Stock for my Debts must *Debtor* be,
And Creditor by Property;
Profit and Loss Accounts are plain,
I *Debit* Loss and *Credit* Gain."

LESSONS IN ENGLISH.—No. LVI.

By JOHN R. BEARD, D.D.

PREPOSITIONS.

In the universe, and in human life, things stand not apart and alone, but are connected together, and act one upon another. This system of mutual dependence is conceived of by the mind, and finds utterance in our words. If the utterance is a suitable and sufficient utterance, language must represent the reciprocal relations that exist everywhere. Language does express those relations. Dependence exists in language as much as in the universe. The object depends on its verb; the possessive case depends on its noun; nouns generally depend also on prepositions. The dependence of nouns on prepositions is an essential element in language. If I say "I go," I make a scarcely intelligible statement, but if I say "I go to school," I make a full statement, and am understood. Remove the "to," the sentence is incomplete. I have uttered no idea. *To* is a preposition, hence you see that in certain forms of words prepositions are necessary to the sense. Here the relation marked by the preposition is the relation of a verb to a noun. How does *go* stand related to *school*? In the preposition *to* the answer is found. Instead of *to* the preposition might be *from*, or *out of*, still the relation of the verb *go* to the noun *school* depends for its character on the preposition. Not wholly or exclusively does the relation depend on the preposition. In part the relation depends on the verb. In full, then, the relation depends on the verb and on the preposition. The preposition supplements the verb. The preposition supplies that of which the verb fails. The preposition defines the exact relation of the verb to the noun. Hence the preposition might be considered as a part of the verb; and the verb, instead of being a simple word, might be regarded as a compound word, thus: "I *go-to* school," "I *come-from* school." Were the verbs so regarded, *school* would then be simply the object to the compound verbs *I go-to, I come-from*. Such is the case in Greek and Latin. In the latter language, for instance, the preposition enters as a prefix into combination with the verb, and the two in combination govern their case, that is, simply, and in virtue of their own power, take an object. I may make this clear by an instance: in Latin deprimo means *I sink*, thus, deprimere navem is *to sink a vessel*; here *deprimo* governs its case *navem*, as if it were a simple word; it is in reality a compound word, made up of the preposition de, *down*, used as a prefix, and premo, *I press*, so that the compound means *I press down*. But take the English *press down* separately, and neither of the parts expresses the idea of sinking; it is only the combination of the two that is equivalent to the simple verb *to sink*.

These observations may suffice to explain the general character and office of prepositions. A preposition, then, expresses, or aids to express, the relation which exists between a verb and a noun. Under the guidance of this definition we should expect to find a verb wherever a preposition is used. The expectation is just. Wherever you have a preposition, you must have a verb either expressed or understood. The term *verb* is here used in its widest acceptation. The term *verb* includes what may be called *verbal phrases*, such as adjectives and parts of the verb to be; e. g., "*he is fit for* nothing," "*they are ready* to die," "*is fit for*," and "*are ready to*" are *verbal phrases* or forms, and include each a preposition. *Verbal nouns*, or nouns in which action is implied, may also have prepositions after them; e. g.,

The *going down to* the town was more difficult than the *going up* to the citadel.

Going down (better written going-down) and *going up* denote motion, and are verbal nouns; consequently they have after them the preposition *to*. In some instances the verbal action is concealed; e. g.,

The way to London is long and difficult.

But here the action of a verb is implied; in full the phrase would be, the way *which conducts* to London, &c. At the least some part of the verb *to be* exists or is implied in the preposition; e. g.,

"Where is the book?" "On the floor," "in the cupboard;" that is, "the book *is* or lies on the floor," "the book *is* in the cupboard."

It ensues from the preceding remarks that some prepositions are united with verbs of motion, and that others are united with verbs of rest. Accordingly, prepositions in general may be divided into the two great classes of *Prepositions of Motion*, and *Prepositions of Rest*; a third class ensues from combination, and these are called *Prepositions of Motion and Rest*, being applicable to both. There thus arises this classification:—

PREPOSITIONS

OF REST.	OF MOTION.	OF REST AND MOTION.
amid	about	about
at	above	above
beside	across	across
by	against	against
concerning	along	along
during	among	among
except	athwart	athwart
for	before	before
from	below	below
in	beneath	beneath
near	between	between
of		
on	beyond	beyond
regarding	down	
respecting	into	
save	out of	
since	over	over
touching	round	round
	through	through
	till	
upon	to, unto	
with	toward	toward
within	under	under
without	up	

The prepositions thus arranged may be put into other classes. There are the monosyllabic, namely, *at, by, for, from, in, near, of, on, save, since, through, till, to, up, with*. Of these, all except *near, save, since*, and *till*, are original and proper prepositions; that is, prepositions properly so called, and nothing but prepositions. Of the excepted words, *near* is an adjective, *save* is a verb, *since* and *till* adverbs of time or conjunctions. From the monosyllabic or primitive prepositions, *compound* or derivative prepositions are formed; as, from in and to, *into*; from on and up, *upon*. Other prepositions are compounds; as, *about, above, across, against, along*, &c. Several of the compound prepositions are used as adverbs, that is, they are taken with the verb rather than with the noun; e. g., "he ran-about," "he went-above," "the ship sailed-along swiftly. Five words given in the lists as prepositions, are strictly present participles, namely, *concerning, during, regarding, respecting, touching*. Two are verbs in the imperative mood, that is, *save* and *except* (sometimes the participial form *excepting* is preferred). Of the compounds, the derivation of some is very clear; e. g., within is *with* and *in*; without, *with* and *out*; beyond, *be* (by), and *yon* (yonder); across is a, *on* and *cross*; along is *on*, and *long*.

The origin of those prepositions, the origin of which we can trace, suggests hints as to the origin of others. In the lists there are, we have seen, prepositions which were at first parts of verbs, such as *touching* and *save*. Probably, therefore, all prepositions may at one time have been parts of verbs; *at*, for instance, seems connected with a Hebrew word similar in form, which signifies *to go*; and *through**, with a Gaelic word similar in form, which signifies *to pierce*. If prepositions have a verbal origin, their verbal connexion and force receive illustration.

At first, prepositions had reference to *place*, their application being exclusively to *physical objects*; only by degrees did they come to be turned away from the physical to intellectual or moral objects. In the following sentence I have comprised the primitive prepositions so as to show their application to physical objects:—

The new settler *at* the river, in the fear of an enemy's coming *in* arms *from* their camp *through* the forest, *with* fugitive slaves, *to* carry fire and sword *up* and *down* the land, has at length prudently rebuilt *for* a fort the house lately destroyed *by* fire.

The prepositions that are undeclined apply to physical objects. Among physical objects, place was that of which prepositions were originally employed. Thus we say, "the man is *at* home;" "fish are *in* the sea;" "the possessor *of* the castle;" "the barn goes *with* the farm;" "the cows went *to* the milk-pail;" "the nurse took the sick child *up* stairs at night, and brought it *down* in the

* *Through* is, in our opinion, from the Greek *Thura*, (German *Thur*, Sanscrit *Dodr*, English *Door*,) a *door* of a room or a house, a *gate*, an *entrance*, i.e. anything we go through.—ED.

morning;" "he intended the shed *for* a granary;" "he came *by* the railway to Brighton."

From denoting place, however, prepositions easily passed to denote time. In the instances just given, at (in "*at* night") and in ("*in* the morning") relate to time.

Such is the original service rendered by prepositions. At present, prepositions express the nicest distinctions of thought, the most delicate shades of feeling, and the highest flights of imagination; to so great an extent has language, considered as the handmaid to the human mind, made progress in adaptation and refinement.

Besides prepositions, properly so called, there are what I may term *prepositional phrases*—forms of words, that is, which in their combined effect have the force of prepositions. Take, for instance, the set of words "with respect to;" you may either parse these words separately, or you may consider them as a whole. If you take them as a whole, you may call them a prepositional phrase. So with the phrase "in consequence of." The prepositional force of these forms of words depends mainly on the preposition *to* or *of*, which stands at the end. I give a number of

PREPOSITIONAL PHRASES.

According to,	With a view to,	In spite of,	On account of,
Contrary to,	In behalf of,	By the side of,	Owing to,
In opposition to,	In virtue of,	In order to,	In consequence [of,
With respect to,	By dint of,	Because of,	
With regard to,	Instead of,	By reason of,	For the sake of.

Let it, then, be observed, that a noun may be dependent on a preposition; for example:—

He died by his own hands.

Here the word hands depends on the preposition *by*. In parsing such a sentence, you may simply say that the noun *hands* is dependent on the preposition *by*; or you may declare the same fact by saying that the noun *hands* is governed by the preposition *by*; or, again, you may state that the noun *hands* is the object to the preposition *by*. Hence ensues the general rule or statement that

Nouns are dependent on, or governed by, prepositions;

or,

Prepositions take after them nouns as their object.

In this disquisition on prepositions, I have touched on the province of syntax. To syntax the disquisition properly belongs, for as prepositions undergo no inflexions, they scarcely have their place here. Yet, for the sake of uniformity of treatment, I have given these general remarks in this part, and that with the less hesitation, because, in teaching, repetition, if it only is accompanied with variations, has great advantages.

EXERCISES FOR PARSING.

"I know of no principle which it is of more importance to fix in the minds of young people than that of the most determined resistance to the encroachments of ridicule. Give up to the world, and to the ridicule with which the world enforces its dominion, every trifling question of manner and appearance; it is to toss courage and firmness to the winds, to combat with the mass upon such subjects as these. But learn from the earliest days to insure your principles against the perils of ridicule: you can no more exercise your reason, if you live in the constant dread of laughter, than you can enjoy your life if you are in the constant terror of death. If you think it right to differ from the times, and to make a stand for any valuable point of morals, do it, however rustic, however antiquated, however pedantic it may appear; do it, not for insolence, but *seriously* and *grandly*—as a man who wore a soul of his own in his bosom and did not wait till it was breathed into him by the breath of fashion. Let men call you mean, if you know you are just; hypocritical, if you are honestly religious; pusillanimous, if you feel that you are firm. Resistance soon converts unprincipled wit into sincere respect; and no aftertime can tear from you those feelings which every man carries with him who has made a noble and successful exertion in a virtuous cause.—*Sydney Smith.*

In Saint Germain's, in the Isle of Man, the following singular epitaph is yet to be seen, in Latin, over the tomb of Dr. Samuel Rutter, formerly prebendary of Litchfield, and afterwards Bishop of Sodor and Man:—

In this house
Which I have borrowed from
My brethren, the worms,
Lie I
Samuel, by divine permission,
Bishop of this island.
Stop, reader;
Behold and smile at
The Palace of a Bishop!
Who died May 30,
In the year
1653.

SPECIMEN OF PARSING.

Errors, to be dangerous, must have a great deal of truth mingled with them; it is only from this alliance that they can obtain circulation.

Errors, a common noun, of the neuter gender, the plural number, the subject to the verb *must*.

To, a preposition, standing before and marking the infinitive mood, as *to be*; the preposition *to* is here dependent on the noun *errors*, the phrase being idiomatic. The phrase may be regarded as elliptical also; in full it might stand thus: "Errors, if they are to be," &c.; where *to* depends on the verb *are*, as in these expressions, "if I *am to* go;" "if the house *is to* be cleared."

Be, a verb, in the abstract or indefinite form, commonly called the infinitive mood; *be* depends on *to*.

Dangerous, an adjective, agreeing with *errors*.

Must, a verb, agreeing with its subject *errors*.

Have, a verb, in the infinitive mood, dependent on *must*.

A, the indefinite article.

Great, an adjective, formed by *er* and *est*; as, great, greater, greatest.

Deal, a noun, of Saxon origin, the object to the verb *have*.

Of, a preposition, governing *truth*.

Truth, an abstract noun, governed by or dependent on the preposition *of*.

Mingled, a passive participle, from the verb *to mingle*; mingled stands in agreement with *truth*, or, rather, *a deal of truth*.

It, a personal pronoun, of the neuter gender, singular number, the subject to the verb *is*.

Is, a verb, from *to be*, present time, agreeing with its subject *it*.

Only, an adverb.

From, a preposition, governing *alliance*.

This, a demonstrative pronoun, singular number (plural, *these*), in the neuter gender, to agree with *alliance*.

Alliance, a noun neuter, in the singular number, depending on the preposition *from*.

That, a conjunction.

They, a personal pronoun, neuter gender, because *errors*, to which it refers, is in the neuter gender, third person plural, the subject to the verb *can*.

Can, a verb, of the present tense, agreeing with its subject *they*.

Obtain, a verb, in the infinitive mood, depending on *can*.

Circulation, a noun neuter, the object to the verb *obtain*.

Un savant connaît un ignorant, parce qu'il a été ignorant; mais un ignorant ne peut pas juger d'un savant, parce qu'il n'a jamais été savant.—*Maximes des Orientaux.*

Celui qui souhaiterait sérieusement des illusions aurait au-delà de ses vœux.—*Vauvenargues.*

C'est le rôle d'un sot d'être importun; un homme habile sent s'il convient ou s'il ennuie; il sait disparaître le moment qui précède celui où il serait de trop quelque part.—*La Bruyère.*

La véritable indépendance repose dans ces trois mots français que j'ai toujours admirés: *Vivre de peu.* Vivre de peu! voilà le meilleur préservatif contre l'esclavage, et ce précepte ne se rapporte pas seulement aux vêtements, à la nourriture, mais à bien d'autres choses.—*W. Cobbett.*

Chacun a son fardeau, chacun a ses défauts: nul ne se suffit à soi-même, et n'est assez sage pour soi-même; mais nous devons nous supporter, nous consoler, nous aider, nous instruire, et nous avetir mutuellement.—*Thomas à Kempis.*

Le cœur de l'ingrat est semblable à un désert qui boit avidement la pluie tombée du ciel, l'engloutit et ne produit rien.—*Maximes des Orientaux.*

LESSONS IN GERMAN.—No. LVII.

§ 46. Distributive Numerals.

The distributives, which answer to the question: "*How many at a time?*" are formed, as in English, by coupling cardinals with the conjunction und, and; or by using before them the particle je (*ever; at a time*); thus,

zwei und zwei, *two and two*, or je zwei, *two at a time;*
drei und drei, *three and three*, or je drei, *three at a time*, &c.

§ 47. Multiplicative Numerals.

The multiplicatives, which answer to the question: "*How many fold?*" are formed from the cardinals by adding the suffix fach (*fold*) or fältig (*having folds*); thus,

einfach or einfältig, * onefold, or single;
zweifach or zweifältig, twofold, or having two folds, or double
dreifach or dreifältig, threefold or treble, or triple.
vierfach or vierfältig, fourfold or having four folds, or quadruple.

§ 48. Variative Numerals.

Variatives, which answer to the question: "*Of how many kinds?*" are formed from the cardinals by affixing lei (*a sort* or *kind*), the syllable er being inserted for the sake of euphony; thus,

einerlei, of one kind;	viererlei, of four kinds;
zweierlei, of two kinds;	fünferlei, of five kinds;
dreierlei, of three kinds;	mancherlei, of many kinds; &c.

§ 49. Dimidiative Numerals.

The dimidiatives, which answer to the question: "*Which* (i. e. which of the numbers) *is but a half?*" are formed from the ordinals by annexing the word halb (*half*); thus,

zweitehalb, † *the second half*, that is, one *whole and* a half; 1½.
drittehalb, *the third half*, i. e. two *wholes and a* half; 2½.
viertehalb, *the fourth half*, i. e. three *wholes and* a half; 3½; &c.

§ 50. Iterative Numerals.

The iteratives, which answer to the question: "*How often*, or *how many times?*" are formed from cardinals and from indefinite numerals, by the addition of the word mal (*time*); thus,

einmal, one time; once;	viermal, four times;
fünfmal, five times;	zweimal, two times, twice:
dreimal, three times;	sechsmal, six times;
jedesmal, each time;	vielmal, many times; &c.

Mal is sometimes separated from the numerals, and is then regularly declined as a neuter noun.

§ 51. Distinctives.

(1) The name distinctives, has been applied to a class of ordinal adverbs, which answer to the question: "*In what place in the series?*" and which are formed by affixing ens to the ordinal numbers: thus,

erstens, first or in the first place;	fünftens, fifthly;
zweitens, secondly;	sechstens, sixthly;
drittens, thirdly;	siebtens, seventhly;
viertens, fourthly;	achtens, eighthly; &c.

(2) Under the name distinctives may, also, be set down a class of numeral nouns, formed from the cardinals by the addition of the suffixes er, in and ling, which are used to designate one arrived at, belonging to, or valued at a certain number: thus,

Sechziger, (*sixtier*), a sexagenarian, or one of a company of sixty;
Dreier, (*one of three*) a threepenny piece, a coin of 3 pfennigs Prussian;
Elfer, (*elven-er*) wine of the year 1811;
Zwilling, (*two-ling*), a twin, a twainer, one of two.

§ 52. Partitives or Fractionals.

Under this name (partitives) are embraced a class of neuter nouns, answering to the question: "*What part?*" which are formed by affixing to the ordinals the suffix tel (*part*): thus

Drittel, a third;	Siebentel, a seventh,
Viertel, a fourth;	Achtel, an eight;
Fünftel, a fifth;	Neuntel, a ninth;
Sechstel, a sixth;	Zehntel, a tenth; &c.

Tel is simply a contracted form of the word Theil, a part. From 20 upwards, note that stel (instead of tel) is added; as, zwanzigstel, the twentieth &c.

§ 53. Indefinite Numerals.

(1) The indefinite numerals, which are, for the most part, used and inflected as adjectives, are commonly divided into such as serve to indicate NUMBER, such as merely denote QUANTITY, and such, finally, as are employed to express both.

Those denoting number only, are the following:

jeder, jede, jedes, *each, every;*
jeglicher —e, —es, „ „ } old and unusual forms of
jedweder, —e, —es, „ „ } jeder.
mancher, manche, manches, *many a; many* (in the plural).
mehrere, *several;* plural of mehr, *more.*

(2) Those denoting *quantity* only, are the following:

etwas, *some*; which is indeclinable.
ganz, *the whole*, as opposed to a *part;* declined generally like an adjective; *indeclinable*, however, when placed before neuter names of places and *not* preceded by an article or pronoun; as, ganz Deutschland, all Germany; (with the article or pronoun preceding) das ganze Deutschland, the whole of Germany; sein ganzer Reichthum, his whole riches.
halb, *half*, follows the same law, in declension, as the word ganz above.

(3) Those denoting *both* number and quantity, are the following:—

aller, alle, alles, *all*; applied to quantity, in the *singular* only; as, aller Reichthum, all riches; alle Macht, all power; alles Gold, all gold; dieses alles (not alle) will ich geben, all this will I give; welches alles, all which. Placed *before* a pronoun, which is followed by a noun, the terminations of declension are often omitted; as, all (for alles) dieses Geld, all this money; all (for aller) dieser Wein, all this wine. In the neuter of the singular, it often denotes an indefinite number or amount; as, alles, was reisen kann, reiset, all that can travel, do travel; er scheint alles zu wissen, he seems to know everything. In the *plural*, the word denotes *number;* as alle Menschen, all men; an allen Orten, in all places:—it is never used in the sense of *whole*, which is expressed by ganz; as, der ganze Tag, the whole day; nor is it followed, as in English, by the definite article; as, alles Geld, (not alles das Geld), all the money;—finally, the phrases "*all of us*," "*all of you*," &c., are in German: wir alle, *we all*, &c. The plural is used like our word *every*; as, ich gehe alle Tage, I go every day.
einiger, einige, einiges, *some; few;* applied to number in the *plural* only.
etlicher, —e, —es, *some;* synonymous with einiger.
kein, keine, kein, *no; none;* declined like ein, eine, ein, one; as, kein Vater, no father; keine Mutter, no mother; kein Kind, no child; when employed as a noun, it takes the old form of declension; as, keiner der alten Verehrer, *none* of the ancient worshippers.
sämmtlicher, —e, —es, *entire;* } regularly declined like ad-
gesammter, —e, —es, *whole;* } jectives.
viel, *much;* (in the plural) *many;* when it expresses quantity or number, taken *collectively*, and is not preceded by an article or a pronoun, is not declined: as, viel Gold, much gold; but, das viele Gold, the quantity of gold;—when applied to a

* Einfaltig is also applied to what is *simple*, *artless* or *silly*.

† Instead of zweitehalb, the word in common use is anderthalb; the part ander being from der andere, the second. The word *would* be ander e halb; but the final e is exchanged for a t, probably, for the sake of assimilating it in *form*, to the rest of the words of this class.

number as *individuals*, it is regularly declined: as, vieler, viele, vieles, &c.; thus, viele Männer sind träge, many men are indolent; er hat sehr viele Freunde und ich habe auch viele, he has a great many friends and I have also a great many.

wenig, *little;* (in the plural) *few;* follows the same rules of inflection as viel above.

mehr, *more;* } are indeclinable; for the plural of mehr, how-
weniger, *less;* } ever, see above.

genug, *enough*; *sufficient*; never declined; Geld genug, money enough.

lauter, *merely*; *only*; never declined lauter Kupfer, copper only or nothing but copper.

nichts, *nothing.*

LESSONS IN GERMAN PRONUNCIATION.—No. IV

Der Morgentraum.
Dair morg'-en-troum.

Ein kleiner Knabe, Namens Leopold, kam des
Ine kli'-ner knâh'-bai, nâh'-mens ley'-o-polt, kâhm dess

Morgens hernieder aus seinem Schlafkämmerlein
morg'-enss hair-nee'-der ouss zi'-nem shlâhf'-kem-mer-line

und weinte bitterlich, also daß ihm die Thränen über
öönt vine'-tai bit'-ter-lich, âl'-zo dâss eem dee trai'-nen ü'-ber

die Wangen liefen. Sein Vater aber und seine
dee vâng'-en lee'-fen. Zine fâh'-ter âh'-ber öönt zi'-nai

Mutter traten bestürzt hinzu, denn sie meinten
mööt'-ter trâh'-ten bai-stürtst'. hin'-tsoo', den zee mine'-ten,

es sei dem Kinde ein großes Uebel begegnet, oder
ess zi dem kin'-dai ine gro'-ssess ü'-bel bai-gaich'-net, o'-der

es sei krank und empfinde heftige Schmerzen und
ess zei krânk öönt emp-fin'-dai hef'-tig-ai shmerrt'-sen öönt

Reißen im Haupt oder in den Gliedern. Und sie frag-
ri'-ssen im houpt o'-der in dain glee'-dern. öönt zee frâhch'-

ten das Kind, und sprachen: Liebes Kind, was fehlet
ten dâss kind, öönt spräh'-chen: Lee'-bess kint, vâss fai'-let

dir, wer hat dir was zu Leide gethan? Da that
deer, vair hât deer vâss tsoo li'-dai gai-tâhn'? Dâh tât

das Kind seinen Mund auf und sprach: Ach ich hatte
dâss kint zi'-nen möönt ouf öönt sprâhch: âch ich hât'-tai

vorher zwölf niedliche weiße Schäfchen, und sie
fore-hair' tswölf neet'-lich-chai vi'-ssai shaif'-chen, öönt zee

gingen um mich her und leckten mir die Hand, und
ghing'-en öom mich hair öönt leck'-ten meer dee hânt, öönt

ich saß unter ihnen mit einem Hirtenstab. Aber
ich zâhss öön'-ter ee'-nen mit i'-nem hirr'[1]-ten-stâhp. âh'-ber

nun sind sie alle fort und ich weiß nicht wo sie geblie-
noon zint zee âl'-lai fort öönt ich vice nicht vo zee gai-blee'-

ben. Als er dieses gesagt hatte, begann er von
ben. âlss air dee'-zess gai-zâhcht' hât'-tai, bai-gân' air fon

neuem bitterlich zu weinen.
noi'-em bit'-ter-lich tsoo vi'-nen.

Da merkten die Eltern die Noth des Kindes und
Dâh merrk'-ten dee el'-tern dee note dess kin'-dess öönt

daß es ein Traum gewesen, und sie lächelten unter
dâss ess ine troum gai-vai'-zen, öönt zee lech'-chel-ten öön'-ter

einander heimlich. Der Vater aber sprach: wir
ine-ân'-der hime'-lich. Dair fâh'-ter âh'-ber sprâhch: veer

lächeln wohl, Mutter, und doch sind unsre Seufzer
lech'-cheln vole, mööt'-ter, öönt dôch zind öön'-zrai zoift'-ser

und unser Unmuth oft die Thränen des Kindes, und
öönt öön'-zer öön'-moot oft dee trai'-nen dess kin'-des, öönt

unser Wünschen und Verlangen, gleichet es nicht oft-
öön'-zer vün'-shen öönt ferr-lâng'-en, gli'-chet ess nicht oft'-

mals Polly's Träumen?
mâhlss pol'-leess troi'-men?

Polly aber war noch immer sehr betrübt um die
Pol'-lee âh'-ber vâhr nöch im'-mer zair bai-trü'pt ööm dee

zwölf Schäfchen. Da berathschlagten die Eltern
tswölf shaif'-chen. Dâh bai-râht'-slâhch-ten dee el'-tern

ernstlich, was zu thun sei, und der Vater erhob
errnst'-lich, vâss tsoo toon zi, öönt dair fâh'-ter err-hope'

sich und sprach: Polly, ich will gehen und deine
zich öönt sprâhch: Pol'-lee, ich vill gey'-hen öönt di'-nai

Schäfchen suchen. Und er ging und kaufte ein Lamm
shaif'-chen zoo'-chen. öönt air ghink öönt kouf'-tai ine lâm

und brachte es und stellte es so, daß der Knabe
öönt brâch'-tai ess öönt stell'-tai ess zo, dâss dair knâh'-bai

es sah. Da ward der Knabe sehr erfreut und lief
ess zâh. Dâh vârt dair knâh'-bai zair err-froi't' öönt leef

hinzu und herzte das Lämchen und sprach: Ja,
hin-tsoo' öönt herrts'-tai dâss lem'-chen öönt sprâhch: Yâh,

das ist es, das ist es! ebenso sah es aus! und er
dâss ist ess, dâss ist ess! ai'-ben-zo zâh ess ouss! öönt air

war sehr erfreut, aber von den eilf andern Lämmern
vâhr zair err-froi't', âh'-ber fon dain elf ân'-dern lem'-mern

sagte er nichts und begehrte ihrer nicht.
zâhch'-tai air nichts öönt bai-gair'-tai ee'-rer nicht.

Da lächelte der Vater abermals und sagte
Dâh lech'-el-tai dair fâh'-ter âh'-ber-mâhlss öönt zâhchtai

zu der Mutter: In Träumen und Thränen gleichen wir
tsoo dair mööt'-ter: In troi'-men öönt trai'-nen gli'-chen veer

Großen wohl dem kleinen Polly. Möchten wir auch nur
gro'-ssen vole dem kli'-nen pol'-lee. Möch'-ten veer ouch noor

in Genügsamkeit und bescheidener Freude an dem
in gai-nü'ch'-zâhm-kite öönt bai-shi'-den-er froi'-dai ân dem

Kleinen und Wenigen ihm ähnlich sein.
kli'-nen öönt vai'-nig-en eem ain'-lich zine.

[1] like *ir* in mirror.

Vocabulary.

Traum, *m.* dream
Knabe, *m.* boy
nieder, down, nether
Schlaf, *m.* sleep
Kammer, *m.* chamber
also, so
bitterlich, bitter
hell, clear, bright
Wange, *f.* cheek
laufen, to run
treten, to step
bestürzt perplexed
meinen, to think, to mean
es sei, there was
begegnen, to meet
groß, great, large, big
Uebel, *n.* evil
oder, or
es sei, it were
krank, sick
empfinden, to feel
heftig, violent
Schmerz, *m.* pain
schmerzen, to pain, smart
Reißen, *n.* tearing, *v. a.* to tear
Haupt, *n.* head, chief
Glied, *n.* limb
fragen, to ask
fehlen, to ail, miss, fail, lack
wer, *interrogative pronoun*, who
zu Leide thun, to do harm
aufthun, to open
Mund, *m.* mouth
vorher, before
zwölf, twelve
niedlich, pretty
weiß, white
Schaf, *n.* sheep
lecken, to lick
sitzen, to sit
unter, among, under
ihnen, *Dative of* sie to them, them
Hirte, *m.* shepherd
Stab, *m.* staff
fort, away, forth
wissen, to know
wo, where

er, he
dieſer, dieſe, dieſes, this
merken, to perceive, to notice
Noth, *f.* distress, need
geweſen war, had been
heimlich, secretly
wir, we
Seufzer, *m.* sigh
Unmuth, *m.* gloom
oft, often
wünſchen, to wish, –*n.* wishing
verlangen, to demand, – *n.* longing, demand
gleichen, to resemble
gleich, alike
immer, always
berathſchlagen, to consult
ernſtlich, seriously
ſuchen, to look for, to seek
Lamm, *n.* lamb
ſtellen, to place, to put
erfreut, rejoiced
herzen, to caress
ausſehen, to look, – out
eilf, eleven
begehren, to demand
Genügſamkeit, *f.* contentment
genug, enough
beſcheiden, modest
Freude, *f.* joy
wenig, little
ähnlich, like, resembling.

LESSONS IN GEOLOGY.—No. XXXVI.

By Thomas W. Jenkyn, D.D., F.R.G.S., F.G.S., &c.

CHAPTER III.

ON THE INFLUENCE OF ATMOSPHERIC AGENTS ON THE EARTH'S CRUST.

SECTION V.

ON THE ACTION OF FROST IN THE DISINTEGRATION OF ROCKS.

You have already been made acquainted with the chemical and mechanical action of water upon rocks. It acts chemically by dissolving the cementing substances of rocks, and in this manner rendering their mass loose and porous. It acts mechanically in two ways: first, it insinuates itself between the particles of the rock, and forces them asunder; secondly, when it is frozen in the interstices of the mass, its expansion in freezing, not only separates small grains on the surface, but it shivers the rock into large fragments, which often, by their own gravity, fall into a lower level.

During wet weather, whether from rain or melted snow, water, in a liquid state, enters between the particles of surface rocks, and penetrates also into the deeper and larger fissures of cragged precipices. When the heat of the atmosphere is below 32° of Fahrenheit's thermometer, the infiltrated water, in the rock begins to freeze, and, in freezing, expands, assumes a larger volume, and becomes solid. This expansion of the water by frost separates the superficial particles of the rock from each other, and shatters larger masses into falling fragments, which either settle at the foot of the cliff, or are strewn on the sides of the mountain.

While the water within these crevices was frozen, the ice formed a kind of cement for the intercalated fragments; but when the increased temperature of the atmosphere melts that cementing ice, the rugged masses crumble and fall in ruinous heaps.

This disintegrating action of frost seems well understood by farmers and the proprietors of quarries. Farmers welcome frost as the agent that is to pulverize the heavy clods of their ploughed furrows. Men who labour in quarries of flagstones and slates expose their massive slabs to the action of frost, for the purpose of having them split into thinner laminations.

The results of the operations of frost upon mountain masses are chiefly seen in those extensive accumulations of angular fragments, which are found fallen and scattered, or heaped, at the foot of precipitous rocks. This accumulation of stones and blocks rises, sometimes, to a considerable height on the face of the cliff. In other cases, though not frequently, the mass of ruined fragments reaches up to the very top of the ledge of rock or mountain, and forms a regular slope from the summit to the base at an angle of nearly forty degrees. In this case, no further addition is made to the heap.

The name which geologists, give to such shattered materials is Débris [pron. *Debree*]; but the accumulation of such fragments on the side of a cliff is called Talus.

Débris is a French word that signifies the wreck, the shattering, or the waste of any thing. The word is very appropriately employed by geologists to designate the wrecks and wastes of mountain cliffs under the slow powers of the chemistry of nature.

This *débris*, or the accumulation of fallen fragments, generally collects at the base of precipices and grows up in the form of a triangular heap, with one side of it resting on the face of the rock from which it has crumbled.

The term Talus is borrowed from the language of fortification. In fortresses, some of the walls are built flat within, but with a gradual slope outwards, for the sake of giving them greater strength. It is this piece of sloping masonry that is called by military engineers a Talus. It is because the heap of ruined fragments, that have fallen from a rock, slopes away from the face of a steep cliff that it is called a Talus. Examples of such a Talus of Débris are usually most striking along the mural faces of trap-cliffs, as represented in fig. 78.

Fig. 78.

A Talus at the Base of a Cliff.

These accumulations of débris at the base of rocks have been sometimes regarded as a geological chronometer. The formation of these taluses by frost and weathering prove that the earth has not existed, in its present state, for any great period of time; at least not from eternity, according to the old Aristotelian doctrine. In the majority of instances the slope of the talus reaches only to a very low part of the face of the cliff. Here the argument is that, if the cliff had existed for an immense period, the slope would have reached to the top; that is, the disintegrating power of the frost and the weather would long ago have been completed and stopped. Such a chronometer, however, teaches geology modesty; for the talus gives no clue to the time when the disintegration commenced.

The disintegration produced by frost and other atmospheric agents may be, in any single year, comparatively trifling. But, as the operations are repeated from year to year, and extended over a wide area of the earth's surface, frost becomes, in fact, one of the most effective agents in nature for levelling islands and continents. The action is slow, but it is regular and permanent.

Sometimes, in rocky districts, especially in the stupendous mountains of South America, enormous blocks and huge masses of rocks, shattered by frost, slide down into the valleys like thundering avalanches. At the base of these stupendous cliffs the talus of shivered fragments rises to the extraordinary height of two thousand feet. Here they rest against the side of "the

everlasting hills," a monument of the action of water and gas, heat and frost, for hundreds of centuries.

These huge accumulations, vast as they are, are only a visible index to the power and the extent of this and of kindred destructive agents. As such they only represent a small amount of the debris actually produced by the temperature of the atmosphere. A large quantity of the mass of materials crumbled down has been swept off by rain, and carried away by running water, to be deposited where the stream itself may rest, either in a lake or in the ocean.

In some rocky districts there are, amid stupendous mountains, extensive valleys, the bottom of which is covered in an extraordinary manner, by myriads of great loose blocks and angular fragments. Mr. Charles Darwin, in his "Naturalist's Journal," describes such a valley in the Falkland Islands. The fragments consist of quartz rock, and the vast mass forms what

Fig. 79.

The Freezing of a Cascade in the Alps.

the inhabitants call "streams of stones." These blocks were not waterworn or rounded, but only have their angles a little blunted. Some of these fragments are, in size, from one or two feet to ten in diameter, others are twenty times as much.

The fragments in this valley do not lie in scattered and irregular heaps, but are spread out horizontally along the valley like sheets or streams of débris. How thick this bed of wrecked rocks may be, it is impossible to ascertain; but the trickling of a small streamlet can be heard through the stones at the depth of many feet below the surface. The actual depth must be great, for the running water must have filled the crevices between the nethermost fragments, long ago, with sand derived from the abrasion of the stones at a higher level.

The breadth of this débris varies from a few hundred feet to a mile. This breadth is constantly being diminished by the growth and the spread of a peaty soil, which is regularly encroaching on each border, and even forms small islets of turf, or oases of vegetation, where a few fragments of block lie sufficiently near to each other. In a valley to the south of Berkeley Sound, Mr. Darwin and his companions found it necessary to cross an uninterruped band of these shivered stones, by jumping from one pointed stone to another, to the extent of half a mile.

The smallness of the slope or inclination in these streams of stones, is one of the most remarkable circumstances connected with them. On the hill sides they may be seen sloping at an angle of ten degrees with the horizon. But in some of the level broad-bottomed valleys, the slant is only just enough to be perceptible.

In some places, a continuous "stream" of these shivered fragments may be followed up the course of a valley, and may be traced up even to the crest of the mountain. On the top of these crests there are vast blocks, larger than many a cottage, that have all the appearance of having been arrested in their course. The whole aspect of this "stream of stones," suggests the idea that all these fragments must have travelled from the head of the valley, as a river of water would have done. Instead of this, it seems more probable, that they have all been hurled from the nearest slopes, and that since those periods, they have been, by some vibratory movement of an earthquake, but a movement of stupendous force, levelled into their present form of a continuous sheet.

The disintegration produced in the elevated peaks of Alpine mountains, by changes of temperature, and by the expansive power of freezing water, must be immense. In Chili, South America, there is a mountain, six thousand four hundred feet high, called the Bell of Quillota. Its summit is covered by a rough mass of green-stone. The whole mass is riven and shattered into massive blocks and rugged fragments. Many of the sides of these blocks exhibited surfaces of every degree of freshness, some as if they had been cracked the day before. On the surfaces of others, lichens appeared, some as if just forming, and others as if they had been long attached.

It is not to be assumed that these appearances are due to earthquakes; for on the summit of Mount Wellington, in Van Dieman's Land, where earthquakes are unknown, the top of the mountain is similarly crowned, and shattered in the same manner. But at Mount Wellington all the fragments appear as if they had been hurled or crumbled in their present position thousands of ages ago. The height of this mountain is four thousand feet. Near the top basalt shews itself, in some places, in columnar cliffs. The shattered basaltic blocks are near the top, among which patches of snow continue for a long time each year.

In the high valleys and glens of the Alps are found many rivulets and streams, which either trickle down the face of a cliff, or, according to their volume and velocity, fall over the ledge or ledges of a precipice, in the form of small cascades and waterfalls. When, at these high elevations, the frost is very intense, the whole volume of such cascades is almost completely frozen up into a solid mass. Such a phenomenon is beautifully represented in fig. 79.

The weight of these masses of ice, combined with the chemical action of intercalated moisture now frozen, must exert a powerful action for the disintegration of the ledges of rock on which they rest. When the warmer weather breaks up these beds of ice, it causes them to move with an abrading force over the surface of the ledge, hurls them down with violence against the soil on the bed below, or speeds them to lower levels on the swollen waters of the stream. The angular masses, as they glide over stones, or dash against projecting rocks, will greatly multiply and extend their destructive operations.

From the description which this lesson has given of a talus, you are not to infer that the débris of rocky mountains are always found in the form of rugged and naked stones, and heaps of rude blocks. Wherever either primitive rocks, or broken strata, present their edges in abrupt surfaces, this generally results from the circumstance that fragments of such mountains have fallen down by rolling upon each other. Such falls take place every spring, and perhaps after every rainstorm, but especially after every thaw. The fragments in their fall, form, as we have described, taluses of greater or less elevation, according as the broken and crumbled masses which have fallen are more or less abundant. It is, in fact, by these taluses that the sloping sides of the valleys are formed in all elevated and mountainous regions. In the course of ages they become covered with vegetation, and may form good soil and fertile meadows; other portions of them may be studded with cheerful villages and populous towns; but both soil and towns rest upon a talus of ruined rocks.

LESSONS IN LATIN.—No. LXI.

By John R. Beard, D.D.

COLLOCATION OF WORDS.

IDIOM.

By the collocation (cum and locus) of words is meant the way or order in which words are placed or stand in relation to each other. That order may be determined, or, if not determined, may be affected by three causes; *first*, the sequence of ideas; *secondly*, the grammatical construction; *thirdly*, the laws of euphony (Greek, eu, *well*; and phonē, *voice*, or *pleasing sound*). To a greater or less degree, and in varying proportions, these three causes operate on collocation in all languages; since a regard to the order of ideas, a regard to the requirements of grammar, and a regard to the laws of sound, are universal principles of cultivated speech. In one language, however, construction may predominate over the sequence of thought; in another the sequence of thought may prevail more than the usages of construction. This position is exemplified in the English and the Latin, for in the English, construction has the more force; in the Latin, the order of the thoughts. Take such a sentence as *James gave John a book*; here the construction shows that James is the *subject* and John the remote *object* to the verb *gave*. Change the place of the two proper names, *John gave James a book*, and you have reversed the sense. Hence, you learn, that, in English the sense of words depends very much on their position.

A great and strict regard to usages relative to position is necessitated in English, because our nouns are only partially inflected. But you are not to suppose that a similar regard is requisite in other tongues; nor are you to think that the order of words which ensues is the natural order. Misconceiving it to be the natural order, grammarians have spoken of a different order, an order regulated by the sense rather than the sound; for example, that observed by the Romans, as an inversion, and young students are apt to regard the inverted order of words as unnatural. In truth, the order required by the thoughts and the order required by the construction, are equally natural; the former was natural to the Romans, the latter is natural to the English; nor when the student of Latin shall have come to think in Latin and to read and understand Latin without putting it into English, will he find any thing either unnatural or difficult in the Latin arrangement of words; on the contrary, he will by practice be led to the feeling that the Latin order, following as it does the sequence of thought is at any rate more philosophical, if not more natural, than the English.

Let us now put the sentence given above into Latin.

Johannes Jacobo librum dedit;
1 5 6 3 4 2
John to James a book gave.

Here there is no doubt that John is the *subject* and James one of the *objects* to the verb dedit, for such they appear to be by

their form. Equally clear is it, that *book* is the direct *object* to the verb dedit, for it is in the *accusative* case. The inflections then of these three nouns clearly indicate their relations. Consequently, so far as the sense is concerned, their position is of small moment. Equally obvious is it that Johannes and dedit, the *subject* and the *verb*, go together. Consequently you gain a latitude as to their position. Now the Romans were fond of throwing the verb to the end; to the end, then, the verb may be thrown without any detriment to the sense. By this arrangement, a sentence is seen to be, as it was originally called, a period, or circle, the thought is enclosed within itself; of the two principal words in a sentence, namely the *subject* and the *verb*, the one *opens* the other *closes* the period, and so the beginning and the end unite to make a complete whole. As now the sense is to a great extent independent of the collocation, so you may vary the relative position of the words; thus

1. Jacobo Johannes librum dedit;
2. Jacobo Johannes dedit librum;
3. Johannes librum Jacobo dedit, &c.

These variations, however, are not capriciously produced. That regard to the order of the thoughts, which is the prevailing law in Latin collocation, determines the changes for the most part, though euphony also has its rights. Thus if you wanted to make it clear that it was to *James* and not to *Thomas* that *John gave the book*, you would employ the arrangement, number 1. But if you wished to declare that it was a *book* and not a *coat* that *John gave to James*, then you would give preference to the form, number 2, or you might set forth the fact with still more emphasis by this arrangement.

Librum Johannes Jacobo dedit.

A great deal of what we in English do by accent and intonation, the ancient Romans did by position. According to their general usage, there were two places of chief emphasis, the beginning and the end of the sentence. The *first* word is the most emphatic, the *last* word is *second* in emphasis. Hence you must put your most important word *first*, and the word next in importance *last*. The middle of a sentence is the place of least emphasis.

These are general principles. These general principles were more or less modified by a regard to euphony. And usages, the origin of which cannot be always traced, exert a controlling power of a general kind. Usage in a measure varies with individuals, being greater in this author and less in that. It also varies in the same person with states of mind; and an arrangement sometimes has no other explanation than that such was the order in which the thoughts and the feelings of a speaker or a writer stood at the moment.

To these general observations may be appended one or two particular observances. I have spoken of the proneness of the Romans to throw the verb to the end of the sentence; the verb may, however, be placed at the beginning, by the sense, by the sound, or by usage; e. g.,

Quaeritur an is qui profuit nobis, si postea nocuit, nos debito solverit;
It is inquired whether he who did us good, set us free from obligation by afterwards injuring us.

Usage formed several combinations which are never or rarely departed from; as, Civis Romanus (not Romanus Civis); senatus populusque Romanus; Pontifex Maximus; Jupiter optimus maximus; Dii immortales; Dii deaeque; huc atque illuc, &c.

A difference of sense may be produced by change of place; thus, Alexander Magnus is *Alexander the Great*, but magnus Alexander is *Alexander who is really great*, whether the famous king of Macedon or not.

The *object* generally comes before the *verb*, as librum scribit, *he writes a book.*

Of two nouns, or a noun and an adjective depending on each other, the *governing* word follows the *governed*; as *reipublicae* est *peritus*, *he is a good politician*; again,

Prudentia est *rerum* expetendarum fugiendarumque *scientia*;
Prudence is the knowledge of objects to be sought and to be shunned.

Related or contrasted words are put by the Romans so as to bring out their bearing on each other to the best advantage; e. g.,

Quod non *dedit* fortuna non *eripit*;
What fortune gives not, it takes not away.

Regard to emphasis may produce so complete an inversion as to make the sentence unintelligible, if construed into English according to its Latin order; e. g.,

Provocantibus ad proelium responsum Romanus nemo reddebat;
To them challenging to battle reply Roman no returned; that is, no Roman returned a reply to them challenging to battle.

In sentences that contain a noun with its adjective governing another noun, the *governed* noun is placd between the *governing* noun and its adjective; e. g.,

Admirabilis *benevolentiae* magnitudo;
The admirable greatness of benevolence.

So with other governed words; e. g.,

Brevissimus *in Britanniam* trajectus;
The shortest passage to England.

Words connected in sense and grammar are separated by euphony; e. g.,

Admirabilis exardescit benevolentiae *magnitudo*;
An admirable greatness of benevolence bursts forth.

When I speak of euphony I mean that which was euphonic (*well-sounding*) to Roman ears. *Alliteration*, or the succession of words beginning with the same letter, is avoided by good English writers, but instances may be found of evidently designed alliteration in the best Roman classics. Nor was it always possible for a Latin writer to avoid collocations, which to us, at least, are anything but harmonious, such as the recurrence of words ending in *um*, in *is*, in *orum*, to which the language is very liable; as null*is* sati*s* certi*s* mandati*s*.

The Romans avoid ending a long sentence with a monosyllable, or placing a short word immediately after a long one, influenced in these and similar things by laws of euphony common to all languages. Let the student read the two following sentences and say which of the two sounds the better; in the second, vicit is taken from the usual place of the verb at the end of the sentence, and placed between words intimately connected in form and in import; the sentence is improved by the change;

1. Cæsar Gallos fortissimos et omni rerum copiâ abundantes vicit.
2. Cæsar Gallos vicit fortissimos et omni rerum copiâ abundantes.
Cæsar conquered the Gauls, being very brave and abounding in all things.

The verbs inquit, opinor, quaeso, aio, censeo, &c., are interposed in the course of the sentence, and not placed at either the commencement or the termination.

Nouns in the vocative are also generally interposed.

Those prepositions, whose usual place is before their nouns, are sometimes, especially in poetry, placed after or between the noun and its adjective. I finally warn the student that in all things, and especially in idiomatic usages, he must read and meditate the classics themselves with the utmost care. The practice of double translation would afford great aid. Select an easy passage of Cicero's; translate it into English, as nearly as possible, word for word; to-morrow, put your English back into Latin, and then, comparing *your* Latin with *Cicero's* Latin, correct the former by the latter, taking it for granted that you are wrong when you differ from him. The steady and constant pursuit of this practice would in due time suffice to make you a good Latin scholar.

EXERCISES—LATIN-ENGLISH.

Jugurtha vestris jussis obediens erit; invidia ex opulentiâ orta est; Numa Pompilius rex creatus est; Tyrii interrogabant num major Neptuno esset Alexander; vidimus eos ardentes tum cupiditate tum metu; homini pecuniam dono dedit; civem proditionis accusavit; corporis dolorem animo judicamus, animi morbum corpore non sentimus; vita ejus insidiarum est plena; Flaccus ex Asiâ in Macedoniam intravit; certum est vivere hominem qui spirat et spirare qui vivit; poeta peccat quum probam orationem affingit improbo; Zeno naturalem legem divinam esse censet; omnium animantium formam vincit hominis figura; rerum copia verborum copiam gignit; necessitatis inventa antiquiora sunt quum voluptatis; doloris medicinam a philosophis peto; concordiâ parvae res crescunt, discordiâ maximae dilabuntur; et secundas res splendidiores facit amicitia, et adversas leviores; est hominum naturae, quam sequi debemus, maxime inimica crudelitas; reliqua vitae instituta te docebo.

ENGLISH-LATIN.

He said a word to me; to thee? no, to my father; to my father he said a word; one word only? no, two words, he said to my

father two words; was it not to thy sister he spoke; no, it was to his own wife he spoke; to speak useful things is better than to be silent; this is the greatest conflagration within the memory of man; Cicero declares that he always began to speak with fear; religion alone is enough for a happy life (ad beate vivendum); are riches enough for a happy life? proceed, pupils, said the master, and learn very many things.

LESSONS IN ALGEBRA.—No. V.

From the principles explained in our last lesson we derive the following general rule for Multiplication:—

89. RULE.—*Multiply the letters and co-efficients of each term in the multiplicand by the letters and co-efficients of each term in the multiplier; and prefix to each term of the product, the sign required by the principle, that like signs produce +, and unlike signs —; lastly, unite such terms as are similar.*

Otherwise.—*Multiply every part of the multiplicand by every part of the multiplier, and collect the results as in Addition.*

EXAMPLES FOR PRACTICE.

1. $5ax$ and $3ay$. Ans. $15a^2xy$. 4. x^5 and x^5. Ans. x^{10}.
2. v^{n+1} and v^{n-1}. Ans. v^{2n}. 5. x^n and x^n. Ans. x^{2n}.
3. v^{m+p} and v^{n-p}. Ans. v^{m+n}. 6. x^2y^3 and x^5y^2. Ans. x^7y^5.
7. $x^3-3x^2y+3xy^2$ and axy. Ans. $ax^4y-3ax^3y^2+3ax^2y^3$.
8. $1-2x+3x^2-4x^3$ and $1+x$. Ans. $1-x+x^2-x^3-4x^4$.
9. $x^2+2ax+a^2$ and $x^2-2ax+a^2$. Ans. $x^4-2a^2x^2+a^4$.
10. $v-2x$ and $2x-3z$. Ans. $2vx-4x^2-3vz+6xz$.
11. Multiply $a+3b-2$ into $4a-6b-4$. Ans. $4a^2+6ab-12a-18b^2+8$.
12. Multiply $4ab\times x\times 2$ into $3my-1+h$. Ans. $24abmxy-8abx+8abhx$.
13. Multiply $(7ah-y)\times 4$ into $4x\times 3\times 5\times d$. Ans. $1680adhx-240dxy$.
14. Multiply $(6ab-hd+1)\times 2$ into $(8+4x-1)\times d$. Ans. $96abd-14hd^2+14d+48abdx-8d^2hx+8dx$.
15. Multiply $3ay+y-4+h$ into $(d+x)\times(h+y)$. Ans. $3adhy+2dhy+dh^2-4dh+3ahxy+2hxy+h^2x-4hx+3ady^2+dy^2-4dy+3axy^2+xy^2-4xy$.
16. Multiply $6ax-(4h-d)$ into $(b+1)\times(h+1)$. Ans. $6abhx-4bh^2+bdh+6abx-4bh+bd+6ahx-4h^2+dh+6ax-4h+d$.
17. Required the continual product of $a+b+c$, $-a+b+c$, $a-b+c$, and $a+b-c$. Ans. $2a^2b^2+2a^2c^2+2b^2c^2-a^4-b^4-c^4$.
18. Find the product of $x^2-y^2+z^2-v^2$ and $x^2+y^2-z^2-v^2$. Ans. $x^4-y^4-z^4+v^4-2v^2x^2+2y^2z^2$.
19. Find the continual product of $2x-y$, $2x+y$, and $4x^2+y^2$. Ans. $16x^4-y^4$.
20. Multiply $a+b$ into $a+b$ into $a+b$. Ans. $a^3+3a^2b+3ab^2+b^3$.
21. Multiply $x+y$ into $x-y$ into $x+y$. Ans. $x^3+x^2y-xy^2-y^3$.
22. Multiply $4(x+y)$ into $3a$ into $6b$ into 3. Ans. $216abx+216aby$.
23. Multiply $3(a+b+c+d)$ into xyz. Ans. $3axyz+3bxyz+3cxyz+3dxyz$.
24. Multiply $xx+xy+yy$ into $x-y$. Ans. $xxx-yyy$.
25. Multiply $aaa-bbb$ into $aaa+bbb$. Ans. $aaaaaa-bbbbbb$.
26. Multiply $aa-ax+xx$ into $a+x$. Ans. $aaa-xxx$.
27. Multiply $yyy-ayy+aay-aaa$ into $y+a$. Ans. $yyyy-aaaa$.
28. Multiply $15a+20bb$ into $3a-4bb$. Ans. $45aa-80bbbb$.
29. Multiply $3a(x+y)\times 4$ into $a+b$. Ans. $12a^2x+12a^2y+12abx+12aby$.
30. Multiply $aa+2ab+bb$ into $a+b$ into $a+b$. Ans. $aaaa+4aaab+6aabb+4abbb+bbbb$.
31. Find the product of $x-2x^2+3x^3$ and $4x^4+5x^5-6x^6$. Ans. $4x^5-3x^6-4x^7+27x^8-18x^9$.
32. Find the product of $5y^5-7y^4-8y^3+3y^2+y$ and $7y-8$. Ans. $35y^6-89y^5+85y^3-17y^2-8y$.
33. Find the product of a^3-2a^2+3 and a^3+2a-3. Ans. $a^6-2a^5+2a^4-4a^3+6a^2+6a-9$.
34. Find the product of $v^4-4av^3+6a^2v^2-4a^3v+a^4$ and $v^3-3av^2+3a^2v-a^3$. Ans. $v^7-7av^6+21a^2v^5-35a^3v^4+35a^4v^3-21a^5v^2+7a^6v-a^7$.
35. Find the product of $x^3-a^2x+2a^3$ and $x^2-ax+2a^2$. Ans. $x^5-ax^4+a^2x^3+3a^3x^2-4a^4x+4a^5$.
36. Find the continual product of $x-1$, $x+2$, $x+4$, and $x-5$. Ans. $x^4-23x^2-18x+40$.
37. Multiply $1-x+x^2-x^3+x^4-x^5$ by $1+x+x^2$. Ans. $1+x^2-x^3+x^4-x^5-x^7$.
38. Multiply $1+x+x^2+x^3+x^4+x^5$ by $1-x+x^2$. Ans. $1+x^2+x^3+x^4+x^5+x^7$.
39. Multiply $1+x+x^2+x^3+x^4+x^5$ by $1-x+x^2-x^3+x^4-x^5$. Ans. $1+x^2+x^4-x^6-x^8-x^{10}$.
40. Multiply $a+2b+c$ by $a-c$. Ans. $a^2+2ab-2bc-c^2$.
41. Find the continual product of $xy-1$, $xz-1$, and $yz-1$. Ans. $x^2y^2z^2-x^2yz-xy^2z-xyz^2+xy+xz+yz-1$.
42. Find the continual conduct of x^3+yz, y^3+xz, and z^3+xy. Ans. $2x^3y^3z^3+x^3y^3+x^3z^3+y^3z^3+xyz^4+xzy^4+yzx^4$.
43. Multiply $a^2+b^2+c^2-ab-ac-bc$ by $a+b+c$. Ans. $a^3+b^3+c^3-3abc$.

DIVISION.

ART. 90.—Ex. 1. A man divided $48x$ apples among 6 boys. How many did each receive?

Here, if 6 boys receive $48x$ apples, it is manifest that 1 boy will receive $\frac{1}{6}$ of $48x$ apples; but $\frac{1}{6}$ of $48x=8x$ apples; for $48x\div 6=8x$. Whence $8x$ apples is the answer.

Ex. 2. If 8 hats cost $24a$ shillings, what will 1 hat cost?

Here, reasoning as before, 1 hat will cost $\frac{1}{8}$ of $24a$ shillings, but $24a\div 8=3a$; therefore $3a$ shillings is the answer.

The process followed in these examples is called DIVISION. *It consists in finding how many times one quantity contains another*; and is *the reverse* of multiplication. The quantity to be divided is called the *dividend*; the *given* factor, the *divisor*; and that which is *required*, the *quotient*.

91. DIVISION *therefore is finding a quotient, which multiplied into the divisor will produce the dividend.* As the product of the divisor and quotient is equal to the dividend, the quotient may be found, by resolving the dividend into two such factors, that one of them shall be the divisor. The other will, of course, be the quotient.

Suppose, for instance, that abd is to be divided by a. The factors a and bd will produce the dividend. The first of these, being a divisor, may be set aside as the one factor. The other factor is the quotient.

92. *When the divisor therefore is found as a factor in the dividend, the division is performed by cancelling this factor.*

Ex. 1. Divide cx by c. Ans. x. 2. Divide dh by d. Ans. h.
3. Divide drx by dr. Ans x. 4. Divide hmy by hm. Ans. y.
5. Divide $dhxy$ by dy. Ans. hx. 6. Divide $abcd$ by b. Ans. acd.
7. Divide $abxy$ by ax. Ans. by.

93. PROOF.—*Multiply the divisor and the quotient together, and the product will be equal to the dividend, if the work is right.*

Thus $ax\div a$ gives the quotient x. Proof. Here $x\times a$ gives the dividend ax.

94. If a letter is *repeated* in the dividend, care must be taken that the factor which is rejected be only equal to the divisor.

8. Divide aab by a. Ans. ab. 9. Divide bbx by b. Ans. bx.
10. Divide $aadddx$ by ad. Ans. $addx$.
11. Divide $aammyy$ by amy. Ans. amy.
12. Divide $aaaxxxh$ by $aaxx$. Ans. axh.
13. Divide yyy by yy. Ans. y.

In such instances as the preceding, it is obvious that we are not to reject *every* letter in the dividend which is the same with one in the divisor.

95. If the dividend consists of *any factors whatever*, expunging one of them is dividing by that factor.

14. Divide $a(b+d)$ by a. Ans. $b+d$.
15. Divide $a(b+d)$ by $b+d$. Ans. a.
16. Divide $(b+x)(c+d)$ by $b+x$. Ans. $c+d$.
17. Divide $(b+y)\times(d-h)x$ by $d-h$. Ans. $(b+y)x$.

96. If there are *numeral co-efficients prefixed to the letters, the co-efficients of the dividend must be divided by the co-efficients of the divisor.*

18. Divide $6ab$ by $2b$. Ans. $3a$.
19. Divide $16dxy$ by $4dx$. Ans. $4y$.
20. Divide $25dhr$ by dh. Ans. $25r$.
21. Divide $12xy$ by 3. Ans. $4xy$.
22. Divide $34drx$ by 34. Ans. drx.
23. Divide $20hm$ by m. Ans. $20h$.

97. When a simple factor is multiplied into a *compound* one, the former enters into *every* term of the latter. (Art. 76.) Thus a into $b+d$, is $ab+ad$. Such a product is easily resolved again into its original factors. Thus $ab+ad=a\times(b+d)$.

25. Resolve $ab+ac+ah$ into its factors.

Here $ab+ac+ah=a\times(b+c+h)$; Ans.

26. What are the factors of $amh+amx+amy$? Ans. $am(h+x+y)$.

27. What are the factors of $4ad+8ah+12am+4ay$? Ans. $4a(d+2h+3m+y)$.

In these examples, if the whole quantity be divided by one of the factors, according to Art. 95, the quotient will be the other factor.

28. Divide $(ab+ad)$ by a.
Here $ab+ad \div a = b+d$. Ans.

29. Divide $ab+ad$ by $b+d$.
Here $(ab+ad) \div (b+d) = a$. Ans.

Hence, if the divisor is contained in *every* term of a *compound* dividend, *it must be cancelled in each*.

30. Divide $ab+ac$ by a. Ans. $b+c$.
31. Divide $bdh+bdy$ by b. Ans. $dh+dy$.
32. Divide $aah+ay$ by a. Ans. $ah+y$.
33. Divide $drx+dhx+dxy$ by dx. Ans. $r+h+y$.
34. Divide $6ab+12ac$ by $3a$. Ans. $2b+4c$.
35. Divide $10dry+16d$ by $2d$. Ans. $5ry+8$.
36. Divide $12hx+8$ by 4. Ans. $3hx+2$.
37. Divide $35dm+14dx$ by $7d$. Ans. $5m+2x$.

98. On the other hand, *if a compound expression containing any factor in every term, be divided by the other quantities connected by their signs, the quotient will be that factor.* See Art. 97.

38. Divide $ab+ac+ah$ by $b+c+h$. Ans. a.
39. Divide $amh+amx+amy$ by $h+x+y$. Ans. am.
40. Divide $4ab+8ay$ by $b+2y$. Ans. $4a$.
41. Divide $ahm+ahy$ by $m+y$. Ans. ah.

99. In division, as well as in multiplication, the caution must be observed, not to confound *terms* with *factors*. (Art. 77.)

42. Divide $(ab+ac)$ by a.
Here $(ab+ac) \div a = b+c$ by Art. 97.
43. Divide $(ab \times ac)$ by a.
Here $(ab \times ac) \div a = aabc \div a = abc$ by Art. 94.
44. What is the quotient of $(ab+ac) \div (b+c)$? Ans. a.
45. What is the quotient of $ab \times ac \div (b \times c)$? Ans. aa.

LESSONS IN FRENCH.—No. LXVII.

By Professor Louis Fasquelle, LL.D.

LIST OF IRREGULAR VERBS, &c. (*continued from page* 222).

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
POURVOIR, (se) 3. *to provide*	se pourvoyant pourvu, *f.* e.	je me pour-[vois	je me pour-[voyais	je me pourvus	je me pour-[voirai	je me pour-[voirais	pourvois-toi	je me pour-[voie	je me pour-[vusse
POUVOIR, 3. *to be able.* aux. avoir irregular.	pouvant pu	je puis tu peux il peut n. pouvons v. pouvez ils peuvent	je pouvais tu pouvais il pouvait n. pouvions v. pouviez ils pouvaient	je pus tu pus il put n. pûmes v. pûtes ils purent	je pourrai tu pourras il pourra n. pourrons v. pourrez ils pourront	je pourrais tu pourrais il pourrait n. pourrions v. pourriez ils pourraient		je puisse tu puisses il puisse n. puissions v. puissiez ils puissent	je pusse tu pusses il pût n. pussions v. pussiez ils pussent
PRÉDIRE, 4. *to predict*	prédisant prédit, *f.* e.	je prédis *see* CONTREDIRE	je prédisais	je prédis	je prédirai	je prédirais	prédis	je prédise	je prédisse
PRENDRE, 4. *to take.* aux. avoir irregular.	prenant pris, *f.* e.	je prends tu prends il prend n. prenons v. prenez ils prennent	je prenais tu prenais il prenait n. prenions v. preniez ils prenaient	je pris tu pris il prit n. prîmes v. prîtes ils prirent	je prendrai tu prendras il prendra n. prendrons v. prendrez ils prendront	je prendrais tu prendrais il prendrait n. prendrions v. prendriez ils prendraient	prends q. prenne prenons prenez q. prennent	je prenne tu prennes il prenne n. prenions v. preniez ils prennent	je prisses tu prisses il prît n. prissions v. prissiez ils prissent
PRESCRIRE, 4. *to prescribe*	prescrivant prescrit, *f.* e.	je prescris *see* ÉCRIRE	je prescrivais	je prescrivis	je prescrirai	je prescrirais	prescris	je prescrive	je prescrivisse
PRESSENTIR, 2. *to foresee*	pressentant pressenti, *f.* e.	je pressens *see* SENTIR	je pressentais	je pressentis	je pressentirai	je pressenti-[rais	pressens	je pressente	je pressentisse
PRÉVALOIR, 3. *to prevail*	prévalant prévalu	je prévaux *see* VALOIR	je prévalais	je prévalus	je prévaudrai	je prévaudrais	prévaux	je prévale	je prévalusse
PRÉVENIR, 2. *to prevent*	prévenant prévenu, *f.* e.	je préviens *see* TENIR	je prévenais	je prévins	je préviendrai	je préven-[drais	préviens	je prévienne	je prévinsse
PRÉVOIR, 3. *to foresee*	prévoyant prévu, *f.* e.	je prévois *like* VOIR	je prévoyais *like* VOIR	je prévis *like* VOIR	je prévoirai *like* POURVOIR	je prévoirais *like* POURVOIR	prévois	je prévoie *like* VOIR	je prévisse *like* VOIR
PRODUIRE, 4. *to produce*	produisant produit, *f.* e.	je produis *see* CONDUIRE	je produisais	je produisis	je produirai	je produirais	produis	je produise	je produisisse
PROJETER, 1. *to project*	projetant projeté, *f.* e.	je projette *see* JETER	je projetais § 49, (4.)	je projetai	je projetterai	je projetterais	projette	je projette	je projetasse
PROMETTRE, 4. *to promise*	promettant promis, *f.* e.	je promets *see* METTRE	je promettais	je promis	je promettrai	je promettrais	promets	je promette	je promisse
PROMOUVOIR, 3. *to promote*	promouvant promu, *f.* e.	je promeus *see* MOUVOIR	je promouvais	je promus	je promouvrai	je promou-[vrais	promeus	je promeuve	je promusse
PROSCRIRE, 4. *to proscribe*	proscrivant proscrit, *f.* e.	je proscris *see* ÉCRIRE	je proscrivais	je proscrivis	je proscrirai	je proscrirais	proscris	je proscrive	je proscrivisse
PROVENIR, 2. *to proceed*	provenant provenu, *f.* e.	je proviens	je provenais	je provins	je proviendrai	je proven-[drais	proviens	je provienne	je provinsse
QUÉRIR, *to fetch*	*only used*	*in the infinitive*	*except in the*	*composition of*	*other verbs*				
RABATTRE, 4. *to abate*	rabattant rabattu, *f.* e.	je rabats *see* BATTRE	je rabattais	je rabattis	je rabattrai	je rabattrais	rabats	je rabatte	je rabattisse
RACHETER, 1. *to buy again*	rachetant racheté, *f.* e.	je rachète *ses* ACHETER	je rachetais § 49, (5.)	je rachetai	je rachèterai	je rachèterais	rachète	je rachète	je rachetasse
RAPPELER, 1. *to recall.*	rappelant rappelé, *f.* e.	je rappelle *see* APPELER	je rappelais § 49, (4.)	je rappelai	je rappellerai	je rappellerais	rappelle	je rappelle	je rappelasse
RAPPRENDRE, 4. *to learn again.*	rapprenant rappris, *f.* e.	je rapprends	je rapprenais	je rappris	je rapprendrai	je rappren-[drais	rapprends	je rapprenne	je rapprisse

List of Irregular Verbs, &c., continued.

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
RATTEINDRE, 4. *to reach again*	ratteignant ratteint, *f.* e.	je ratteins	je ratteignais	je ratteignis	je ratteindrai	je ratteindrais	ratteins	je ratteigne	je ratteignisse
REBATTRE, 4. *to beat again.*	rebattant rebattu, *f.* e.	je rebats *see* BATTRE	je rebattais	je rebattis	je rebattrai	je rebattrais	rebats	je rebatte	je rebattisse
RECONDUIRE, 4. *to conduct again*	reconduisant reconduit, *f.* e	je reconduis *see* CONDUIRE	je reconduisais	je reconduisis	je reconduirai	je reconduirais	reconduis	je reconduise	je reconduisisse
RECONNAÎTRE 4. *to recognize*	reconnaissant reconnu, *f.* e.	je reconnais *see* CONNAÎTRE	je reconnaissais	je reconnus	je reconnaîtrai	je reconnaîtrais	reconnais	je reconnaisse	je reconnusse
RECONQUÉRIR 2. *to conquer again*	reconquérant reconquis, *f.* e	je reconquiers *see* ACQUÉRIR	je reconquérais	je reconquis	je reconquerrai	je reconquerrais	reconquiers	je reconquière	je reconquisse
RECONSTRUIRE, 4. *to reconstruct*	reconstruisant reconstruit, *f.* e	je reconstruis *see* CONDUIRE	je reconstruisais	je reconstruisis	je reconstruirai	je reconstruirais	reconstruis	je reconstruise	je reconstruisisse
RECOUDRE, 4. *to sew again*	recousant recousu, *f.* e.	je recouds	je recousais	je recousis	je recoudrai	je recoudrais	recouds	je recouse	je recousisse
RECOURIR, 2. *to have recourse*	recourant recouru	je recours *see* COURIR	je recourais	je recourus	je recourrai	je recourrais	recours	je recoure	je recourusse
RECOUVRIR, 2. *to cover again*	recouvrant recouvert, *f.* e.	je recouvre *see* OUVRIR	je recouvrais	je recouvris	je recouvrirai	je recouvrirais	recouvre	je recouvre	je recouvrisse
RECUEILLIR, 2 *to reap*	recueillant recueilli, *f.* e.	je recueille *see* CUEILLIR	je recueillais	je recueillis	je recueillerai	je recueillerais	recueille	je recueille	je recueillisse
REDIRE, 4. *to say again*	redisant redit, *f.* e.	je redis *see* DIRE	je redisais	je redis	je redirai	je redirais	redis	je redise	je redisse
RÉDUIRE, 4. *to reduce*	réduisant réduit, *f.* e.	je réduis *see* CONDUIRE	je réduisais	je réduisis	je réduirai	je réduirais	réduis	je réduise	je réduisisse
REFAIRE, 4. *to make again*	refaisant refait, *f.* e.	je refais *see* FAIRE	je refaisais	je refis	je referai	je referais	refais	je refasse	je refisse
REJOINDRE, 4. *to rejoin*	rejoignant rejoint, *f.* e.	je rejoins *see* CEINDRE	je rejoignais	je rejoignis	je rejoindrai	je rejoindrais	rejoins	je rejoigne	je rejoignisse
RELIRE, 4. *to read again*	relisant relu, *f.* e.	je relis *see* LIRE	je relisais	je relus	je relirai	je relirais	relis	je relise	je relusse
RELUIRE, 4. *to shine*	reluisant relui	je reluis *see* LUIRE	je reluisais	je reluisis	je reluirai	je reluirais	reluis	je reluise	je reluisisse
REMETTRE, 4. *to remit*	remettant remis, *f.* e.	je remets *see* METTRE	je remettais	je remis	je remettrai	je remettrais	remets	je remette	je remisse
REMOUDRE, 4. *to grind again*	remoulant remoulu, *f.* e.	je remouds *see* MOUDRE	je remoulais	je remoulus	je remoudrai	je remoudrais	remouds	je remoule	je remoulusse
RENAÎTRE, 4 *to revive*	renaissant renè, *f.* e.	je renais *see* NAÎTRE	je renaissais	je renaquis	je renaîtrai	je renaîtrais	renais	je renaisse	je renaquisse
RENDORMIR, 2 *to lull to sleep*	rendormant rendormi, *f.* e.	je rendors *see* DORMIR	je rendormais	je rendormis	je rendormirai	je rendormirais	rendors	je rendorme	je rendormisse
RENTRAIRE, 4 *to darn*	rentrayant rentrait, *f.* e.	je rentrais *see* TRAIRE	je rentrayais		je rentrairai	je rentrairais	rentrais	je rentraie	
RENVOYER, 1. *to send back*	renvoyant renvoyé *f.* e.	je renvoie *see* ENVOYER	je renvoyais § 49, (2.)	je renvoyais	je renverrai	je renverrais	renvoie	je renvois	je renvoyasse
REPAÎTRE, 4. *to feed*	repaissant repu	je repais *see* PAÎTRE	je repaissais	je repus &c.	je repaîtrai	je repaîtrais	repais	je repaisse	je repusse &c.
REPARTIR, 2. *to set off again*	repartant reparti, *f.* e.	je repars *see* SENTIR	je repartais	je repartis	je repartirai	je repartirais	repars	je reparte	je repartisse
REPEINDRE, 4 *to paint again*	repeignant repeint, *f.* e.	je repeins *see* CEINDRE	je repeignais	je repeignis	je repeindrai	je repeindrais	repeins	je repeigne	je repeignisse

FABLES.

LE PALAIS DE LA RENOMMÉE.

Aux extrémités du monde, sous le pôle, dont [S. 30. 8.] l'intrépide Cook mesura la circonférence à travers les vents et les tempêtes; au milieu de terres australes qu'une barrière de glace dérobe à la curiosité des hommes, s'élève [§ 49, (6.)] une montagne qui surpasse en hauteur les sommets les plus élevés des Andes dans le Nouveau-Monde, ou du Thibet dans l'antique Asie.

Sur cette montagne est bâti un palais, ouvrage des puissances infernales. Ce palais a mille portiques d'airain; les moindres bruits viennent (*venir.* 2. *ir.*) frapper les dômes de cet édifice, dont le silence n'a jamais franchi le seuil.

Au centre du monument est une voûte tournée en spirale comme une conque, et faite de sorte que tous les sons qui pénètrent dans le palais, y aboutissent; mais, par un effet du génie de l'architecte des mensonges, la plupart de ces sons se trouvent [S. 35. 2.] faussement reproduits; souvent une légère rumeur s'enfle et gronde en entrant par la voie préparée aux éclats du tonnerre, tandis que les roulements de la foudre expirent en passant par les routes sinueuses [S. 11. 5.] destinées aux faibles bruits.

C'est là que, l'oreille placée à l'ouverture de cet immense écho, est assis sur un trône retentissant, un démon, la renommée. Cette puissante fille de Satan et de l'orgueil, naquit (*naître*, 4. *ir.*) autrefois pour annoncer le mal. Avant le jour où Lucifer leva l'étendard contre le Tout-Puissant, la renommée était inconnue. Si un monde venait à s'animer ou à s'éteindre; si l'Eternel avait tiré un univers du néant, ou replongé un de ses ouvrages dans le chaos; s'il avait jeté un soleil dans l'espace, créé un nouvel ordre de séraphins, essayé [§ 49, 2.] la bonté d'une lumière, toutes ces choses étaient aussitôt connues [S. 41. 6.] dans le ciel par un sentiment intime d'admiration et d'amour, par le chant mystérieux de la céleste Jérusalem. Mais, après la rebellion des mauvais anges, la renommée usurpa la place de cette intention divine. Bientôt, précipitée [§ 66, (3,)] aux enfers, ce [S. 80. 1.] fut elle qui publia dans l'abyme la naissance de notre globe, et qui porta l'ennemi de Dieu à tenter la chûte de l'homme. Elle vint sur la terre avec la mort, et dès ce moment elle établit sa demeure sur la montagne, où elle entend et répète confusément ce qui se passe sur la terre, aux enfers, et dans les cieux.—*Chateaubriand.*

BIOGRAPHY.—No. XI.

MEMOIR OF JOHN KAY, OF ROYTON, NEAR OLDHAM.

A Lancashire Mathematician.

By T. T. Wilkinson, F.R.A.S., and Corresponding Member of the Manchester Literary and Philosophical Society.

John Kay, the son of Thomas and Sarah Kay, was born at Elly Clough, near Royton, in Lancashire, on the 16th of July, 1781. When very young he was sent to a day-school in the neighbourhood, but before he had made much progress in his education, he was removed from school, in order to commence hand-loom weaving, which was then not only his father's occupation, but the principal employment in the county. During his leisure hours, however, he continued to increase his stock of information, and by the time he was eighteen years of age, was sufficiently qualified to take part in "discussions," where he frequently distinguished himself by his unusual powers of oratory. About this time he became acquainted with the late John Butterworth, the well-known geometer, who soon perceived the inclination and aptitude of Mr. Kay for mathematical studies, and therefore lost no opportunity of recommending them more particularly to his attention. Under Mr. Butterworth's guidance and assistance, the elementary portions of mathematics were soon disposed of, nor was it long ere the sublimities of the ancient geometry began to attract the attention of his promising pupil. Influenced by the example of his immediate neighbours, Wolfenden, Hilton, and Fletcher, and no doubt biassed by the predilections of his talented instructor, Mr. Kay's ever favourite study was geometry and its applications. Indeed, he may be said to have devoted almost the whole of his time to these studies alone; for although the subject of mechanics had also its attractions for him, yet most of his investigations in this and other departments of mathematics, have a decidedly geometrical tendency. His first mathematical correspondence appears in the *Gentleman's Diary* for 1808, and exhibits no ordinary degree of elegance and ability. In 1810 he gained the second prize awarded annually by the learned editor and the proprietors of that valuable periodical, and up to 1816 he continued to enrich its pages with many curious and elegant geometrical and mechanical questions and solutions. Mr. Marrat enlisted his services in the concluding numbers of the *Enquirer*, and in the early portion of the *Leeds Correspondent* his name is also of frequent occurrence. The *Gentleman's Mathematical Companion* was his favourite publication, and though active business prevented him from contributing so largely as some other correspondents, yet his communications extend, with the exception of a few intervals, from the year 1808 to almost the close of the work. His most profound investigations relate to the subject of Porisms—a branch of the ancient geometry to which he had paid particular attention:—hence on the appearance of the prize question in the *Companion* for 1822, he produced a solution which gained him the first prize, notwithstanding that Gompertz, Simson, Butterworth, and Epsilon were his competitors.

His contributions to the next number are remarkably elegant, and the solutions to questions 603, 604, and the prize, merit the highest commendation. He proposed the prize questions in the *Companion* for 1824 and 1825, the former of which relates to his favourite subject of Porisms, and exhibits the complete command he had obtained of the ancient modes of investigation. This class of propositions has been singularly unfortunate. Confessedly abstruse—few have been found sufficiently qualified to grapple with its difficulties, and fewer still who have been willing to "contribute their mite to the common stock." It required the persevering energy of Simson to clothe the "dry bones" in the "Collections of Pappus:" the profound researches of Playfair were needed to inspire them with life—and though the labours of Wallace, Noble, Brougham, Galloway, and Davies have done much towards marshalling this "great array," much more appears to be necessary before a successful attempt can be made to carry this stronghold of the ancient geometry. Simson, in his day, regretted that the study of geometry was so little cultivated as not to justify the publication of many of his works. His most valuable researches would have remained a "dead letter," had not the munificence of Earl Stanhope, in some measure, rescued them from oblivion. Lawson attempted an English translation of the "Treatise on Porisms" but the sale would not warrant the publication of more than sixteen propositions. Professor Playfair promised a continuation of his valuable paper on Porisms in the *Edinburgh Transactions*, and even read a portion of his further researches before the Royal Society of Edinburgh; but no traces of his manuscript are now known to exist; and though the *Repository* and the *Mathematician* have aided the efforts of later geometers, yet even at the present time the publication of a "Translation of Simson's Porisms, with notes and Illustrations," by Messrs. Potts and Davies, has been postponed *sine die*, for want of proper encouragement. Mr. Kay often lamented the neglect of this branch of geometrical research, and contemplated the publication of a work on the subject in conjunction with his friend and tutor, Mr. Butterworth. His predilection for pure geometry sometimes led him to overrate its powers, especially when applied to mechanics. A curious instance of this may be seen in the solutions to question 399 of the *Companion*, which not appearing satisfactory, led to the solution and remarks on pp. 843—5, *Companion* for 1819, and to a rejoinder from Mr. Gompertz in pp. 923—4 in the *Companion* for 1820. In 1824, Mr. Kay re-proposed the "Flood-gate question," at the request of his friend Mr. Wolfenden, and an able solution appeared in the following number, which confirmed the latter gentleman's result by a different process. (See *Mech. Mag.* p. 466. vol. xlviii.)

At twenty years of age, Mr. Kay was elected constable of the township of Royton; an office which he filled for many years with great satisfaction to the authorities. He subsequently became a manufacturer of cotton cloth, and at the time of his decease had been the overseer of the poor of Royton for several years. He died, sincerely regretted by all who had the pleasure of his acquaintance, on the 31st of December, 1824, in the 43rd year of his age. His remains were interred in Royton church-yard, and the place where he rests is marked by a plain stone, bearing the following inscription:—

"In mathematics soared his noble mind,
Peace robed his soul—he felt for all mankind;
He loved true virtue, but disliked vain pride;
Truth was his aim, and reason was his guide."

Burnley.

THE SABBATH MORN.

Hail! to this day, the day of days,
For now we rest from toil;
Hail! to this morning, clear and bright,
With sunshine free from foil.

Arise! ye labourers, arise,
Your households now prepare;
Now, lift your voices to the skies,
In morning songs and pray'r.

Ye! who in crowded cities dwell,
Far from the trees and flowers;
Awake! the chorus help to swell,
This day, at least, is ours.

In nature's hall, ye may not roam,
By brooks, or valleys green;
But ye, in temples nearer home
May worshippers be seen.

Ah! do not waste this glorious day;
A sacred song at morn,
The soul brings into healthful play,
And soothes the heart forlorn.

Hope then will whisper in the breast
Of happier days in store,
When we shall keep th' eternal rest,
And toils be felt no more.

For when our thoughts ascend to Him,
Who reigns above the skies;
No sad foreboding thoughts can dim
The joy of heavenly ties.

To God we all our duty owe,
Let that be nobly paid;
From Him all earthly blessings flow;
For us this day was made.

(G. W. *amended.*)

LESSONS IN MECHANICS.—No. XX.

ROAD-MAKING AND PUBLIC WORKS—(*concluded*).

IRON WORKS.

THE original method adopted in working in iron was with the hammer—every iron article was wrought; for, simple as it may appear, the idea of casting involves a more elaborate train of reasoning, and a more complicated method of working, than would be likely to occur in an early state of society. Casting in iron requires, first of all, a thoroughly efficient mode of melting; second, the formation of a wooden model, or a model made in other material; third, the exact arrangement of the clay in which the model is to be placed, so as to form the matrix. All this would not be likely to occur until the arts had made some progress, and it does not appear that the plan was brought into England until the middle of the sixteenth century. We say brought into England, but it is highly probable that the invention of cast iron originated in our own country. Cannons, dealing death to man, and water pipes, supplying man with one of the necessaries of life, are alike cast, or may be cast; and the more perfectly these castings are completed, the more valuable is the work.

The first and simplest contrivance for forging iron, when machinery was brought into use, was the application of water power to the forge hammer. The arrangement was rude, but effective. The shaft or helve of the hammer was usually about nine feet in length, of a proportionate thickness, and was made of ash, clamped with iron hoops. The head of the hammer was of cast iron, weighing seven or eight cwts. At the other end of the shaft there passed through, and was firmly attached to it, a massive collar of cast iron, the pivots of which formed an axis for the hammer working horizontally between two upright supports. An elastic rabbet or spring of timber, somewhat lighter and longer than the helve, but made after the same fashion, was used as a spring to send the hammer down on the anvil with a velocity greater than would be given by its own weight alone. The shaft of the water wheel extending in a direction parallel to the helve of the hammer, towards the end was attached a ponderous frame of cast iron, called an arch chase; holes were cast in this case for the insertion of four blocks of wood, shod with iron on their acting surfaces. These imparted motion to the hammer; for as water was thrown upon the wheel, the shaft, of course, revolved, and the knots just described catching the helve under the belly, lifted it against the rabbet, by which it was again forced down, again to be thrown up, and so on.

Since the introduction of steam, very great improvements have taken place; much of the cumbersome machinery has been dispensed with, and the labour is more completely, more expeditiously, and less expensively performed. The steam hammer of Mr. Nasmyth's has deservedly attracted a large share of attention, and in the Great International Exhibition (1862) other specimens of the steam hammer were exhibited, showing alterations, and, in the opinion of some eminent scientific men, improvements on Nasmyth's hammer.

Iron and coal—iron the body, steam the spirit—child of fire and water—are the mighty genii of this nineteenth century. "It is the possession of iron," says Gisborne, "which constitutes, humanly speaking, the difference between savage and civil society. Its value is instantly discerned even when the eye is but half opening, and the mind but half awakening from the night and torpor of barbarism. When a ship on a voyage of discovery touches at a new island, what, among the productions of an unknown hemisphere laid before the wondering native, is speedily the object of his most intense solicitude? A hatchet, an adze, or a nail—a piece of broken iron, of which he knows only that it is iron, and has not yet thought of a purpose to which it may be applied. But he knows that it is iron, and that is sufficient. In civilised society, the same metal, which the Deity has mercifully provided in larger abundance than any or than all of the rest, maintains, under its varied states and capabilities, a decided pre-eminence in utility."

ANSWERS TO CORRESPONDENTS.

CARLOS.—We have not published a Dictionary of the Spanish language. You might obtain one cheaply at a second-hand bookseller's.

JOSEPH NELSON.—The maps issued with the POPULAR EDUCATOR should be bound up at the beginning of the volume. Photography is pronounced as if written Fo-tŏg-ra-fe.

J. B.—The principle of the atmospheric railway is that of air pressure, the pressure being brought to bear in the rear of whatever has to be urged forward through the vacuum. The first successful experiment was tried, some years ago, at Wormwood Scrubs.

TYPO.—Degrees cannot be obtained by the mere payment of a fee at either of the universities mentioned.

A SCHOOLBOY (Rochdale).—Excellent; the writing would do well either for a solicitor's office or a merchant's counting-house.

J. INCE.—Your letter shall have our best consideration; but allow us to remind you that this is merely a re-issue of the POPULAR EDUCATOR, with some additional matter and amendments, and that in the present series we shall have no space for the introduction of the Hebrew language.

ED. H.—All the materials mentioned in the lessons may be obtained at an operative chemist's. We suspect there must be some defect in your method of manipulation.—A PENMAN: Your handwriting is scarcely good enough for a lawyer's office, but it would become so with practice; we recommend you to devote a certain time every day to practice. Our "Model Copy Books" might give you some help.

F. B.—Our "Latin Dictionary" contains all that you require; it may be had, handsomely bound, in one volume, for 9s. 6d.; post free, 10s. 6d.—A. M.: The "Spanish Lessons" will not appear in the POPULAR EDUCATOR until the fifth volume. The whole work will consist of six volumes; double volumes bind exceedingly well, they are not too bulky. The "Spanish Lessons" may be had separately. We have not published a Dictionary of the Spanish Language.

J. J.—Coral worms are of a great variety of shapes and sizes. The most common of the worms at Loo-Choo, says Basil Hall, was in the form of a star, with arms from four to six inches long, which it moved about with a rapid motion in all directions, probably in search of food. Others were so sluggish that they were often mistaken for pieces of the rock: these were generally of a dark colour, and from four to five inches long, and two or three round. When the rock was broken from a spot near the level of high water, it was found to be a hard and solid stone; but, if any part of it were detached at a level to which the tide reached every day, it was discovered to be full of worms, all of different lengths and colours, some being as fine as thread, and several feet long, generally of a very bright yellow, and sometimes of a blue colour; while others resembled snails, and some were not unlike lobsters and prawns in shape, but soft, and not above two inches long. The growth of coral ceases when the worm which creates it is no longer exposed to the washing of the tide. Thus a reef rises in the form of a gigantic cauliflower, till its top has gained the level of the highest tides, above which the worm has no power to carry its operations, and the reef consequently no longer extends itself upwards.

Z. A.—The ancients did not adopt the principle of pressure whereby water will find the same level at the two ends of a continuous pipe, however much the pipe may dip at the centre; they were acquainted with the principle, but were deficient in the means of providing large pipes of sufficient strength, and they adopted the aqueduct principle instead. In modern water-works, when the source of supply is situated at a higher point than that of the buildings to be supplied, reservoirs are formed to retain a body of water always in readiness; main pipes descend thence to the streets, service pipes extend to the houses, and cisterns and ball-cocks regulate the supply of water, and prevent waste. When the source of supply is lower than the level of the streets and houses to be supplied, a different plan must be adopted. The usual course in such cases is to provide large reservoirs at a considerable elevation, and fill them with water by the forcing process—force pumps generally worked by steam power. Forcing pumps are the only means by which water can be raised to any considerable elevation above its natural source; but reservoirs may be so supplied and made to act as effectually in this way as though the artificial were the natural point of elevation.

N. M.—The velocity of any falling body increases with the distance through which it falls. Owing to the inertia of matter, any force continuing to act upon a mass which is free to obey it produces in it a quickening or accelerated motion; for, as the motion given in the first instant continues afterwards without any further force, merely on account of its inertia, it follows that as much more motion is added during the second instant, and as much again during the third, and so on. As to your second question, four suggestions have been offered with regard to the origin of aërolites:—1. That they are thrown up from terrestrial volcanoes. 2. That they are produced in the atmosphere from vapours and gases exhaled from the earth. 3. That they are thrown from volcanoes in the moon. 4. That they are of the same nature as the planets, either derived from them or existing independently. As to your third question, the appearance of the surface of the moon, as shown by Lord Rosse's telescope, is that of a wide circular range of extinct, or apparently extinct, volcanoes. These rocks surround an immense basin, and rise to a very great height. Utter desolation is the leading characteristic of the scene presented to the gaze of the spectator.

PHYSICAL EDUCATION.—No. III.

(*Continued from page* 210.)

Exercise 4. Movements of the lower extremities. The words of command are :

1. *Common gymnastic step in place !*
2. *Move !*

At the word *Move*, the pupils raise alternately the left and right leg, lifting the knee as high as possible, and keeping the leg from the knee to the ankle in a vertical position, with the toe pointed downwards ; each foot in its turn being brought back to its original position. While doing this, the head is kept straight, the body slightly bent forwards, the arms hanging down by the sides, the fists being slightly closed, and the nails in front. This exercise is continued until these words of command are given :

1. *Ground !*
2. *Halt !*

At the word, *Halt* the pupils place the raised foot close to that which rests upon the ground and on the same line. Fig. 7. This step is performed at first slowly, then gradually faster and faster, and for a longer time, according to the power of the pupils.

This principle indeed is always observed in tempering the rapidity and the duration of the exercises.

Exercise 5. Movements of the upper extremities. The words of command are :—

1. *Vertical motion of the arms !*

Fig. 7.

Fig. 8.

2. *Move !*

At the word *Move*, the pupils simultaneously move their arms upwards and downwards, raising them as high as possible above the head, the fists being closed, and the nails in front, and then bringing them rapidly down again, bending them at the elbow and clapping their hands upon their thighs. Fig. 8.

This exercise is continued until the words of command are given, 1. *Ground*, 2. *Halt*, as before.

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

Exercise 6. The horizontal motion of the arms. Here the words of command are:—

1. *Horizontal motion of the arms!*
2. *Move!*

At the first words of command the pupil raises his closed fists, with the nails upwards, to the height of his elbows, which then forms nearly a right angle. At the word *Move*, he throws his fists forward, so as to bring his arms nearly to a horizontal position; he then draws back his elbows behind him, so as to form nearly half a right angle; and he continues these motions alternately until the words of command are given: *Ground, Halt*; when he resumes his first position. See fig. 9.

Exercise 7. Striking the chest with the fists. Here the words of command are:—

1. *Striking the chest with the fists!*
2. *Move!*

At the word *Move*, the pupil strikes the right breast with the left fist, and the left breast with the right fist, alternately, the nails being turned inwards or towards the chest. In this exercise, the fore-arm only is put in motion, the back-arm remaining attached to the side. This exercise is continued till the words of command, *Ground, Halt*, are given as before, and the original position is resumed. Fig. 10.

Exercise 8. The Pyrrhic Dance. Here the words of command are:—

1. *Pyrrhic Dance!*
2. *Right limbs (the right leg and arm) forward*; or, *Left limbs (the left leg and arm) forward!*
3. *In position!*
4. *Move!*

At the words *In position*, the pupil throws his right leg and arm forwards, turning upon the heel of his left foot; he then rests the weight of his body upon his right foot, leaning slightly forward with his head erect; the right arm is raised so that the fist, with the thumb uppermost, is on a level with the right shoulder; and the left arm is thrown behind the body, being kept nearly parallel to it. At the word *Move*, the pupil throws the right leg and arm back, so as to bring the right heel close to the middle of the left foot without touching the ground, and at the same time the right fore-arm close to the short ribs, and as much behind as possible. He then swings the left arm round towards the right; and by a sudden and violent extension of the right arm, throws the right fist, arm and leg forwards again, so that the whole body resumes the position in which it was at first, viz. when the words of command, *In position*, were given. Fig. 11. This motion is continued until the words *Ground, Halt*, are given; when the pupil resumes his initial position.

The same exercise is performed with the left leg and arm forwards, when the proper changes are made upon the words of command.

Exercise 9. Flexure of the lower extremities. The words of command are:—

1. *Bending the knees!*
2. *Move!*

At the words *Bending the knees*, the pupil brings his feet very near each other, places his hands upon his haunches, with the fingers forward and the thumbs behind. At the word *Move*, he bends his knees, keeping them close together, so as nearly to rest the body on his thighs; the first movement of flexure in this exercise must be slight, the second more distinct, and the third and fourth movements as great as possible, so that the hips may touch the heels. This motion is succeeded by a motion of extension elevating the body to the erect position; and the whole is continued until the words *Ground, Halt*, are given as before. During this exercise, the body remains as much as possible in a vertical position, and the head upright. Fig. 12.

These different exercises having been properly performed, the right extremities (the right leg and arm) may be put in motion *simultaneously*, and then the left extremities. For this purpose, the words of command are:—

1. *Motion of the right extremities!*
2. *Move!*

This exercise is performed with the right leg and arm, as has been already shown for each of these extremities. For the motion of the left extremities, the same orders and motions are given as for the right extremities, *mutatis mutandis*; i. e., *the things being changed which require it.*

Again, similar exercises are performed with the opposite (right and left) extremities; that is, the superior with the inferior, and conversely. The words of command for these exercises are as follow:—

1. *Motion of the opposite extremities!*
2. *Move!*

At the word *Move*, the pupil moves the right arm and the left leg; or, the left arm and the right leg. With these exercises, which can easily be performed without farther instructions, we conclude the first part of our Gymnastic lessons, and proceed to the second, viz.

WRESTLING.

2. If we go back to the fabulous ages of antiquity, we find that *wrestling* was first practised by the ferocious marauders, from which Hercules and Theseus successively freed the Grecian provinces. According to Pausanias, Theseus was the first who combined skill with strength in wrestling, and instituted the public schools called *palæstræ*. Wrestling then soon became an art, and was carried to a high degree of perfection; it was only introduced into the games established by Iphitus, in the 18th Olympiad. In Sparta, both sexes engaged in wrestling. Formed by manly exercises, the women, from a vigorous and severe education, drew the elements of that physical and moral force which afterwards contributed to the formation of the heroes of their country, the patriots of Lacedemonia. In various parts of Greece, boys and girls wrestled with each other, particularly in the island of Chios, as well as in Laconia. Wrestling indeed exists among the modern Greeks, in the states of the Pasha of the Morea. This exercise is said to be practised there in a manner similar to that in which it was performed at the Olympic games.

The different motions employed in wrestling give to the muscles of the body and its members a powerful and continued contraction; exposes them to extraordinary efforts; and accelerates the circulation and the respiration. Persons given to such violent exercise soon acquire an astonishing degree of muscular force, when the reparations of the system take place in proportion to its losses, and when there exists a sufficiency of juices in the animal economy, to supply the enormous development of the muscles, and the vast expenditure of muscular action. This exercise, which, like *fencing*, powerfully excites self-love by the charm of a victory due both to strength and skill, at the same time that it directs attention to the vitality of the locomotive system, is a powerful means of abstracting young men, assembled together in colleges and schools, from the pernicious habits into which they are too apt to fall at the age of puberty.

LESSONS IN ENGLISH.—No. LVII.

By JOHN R. BEARD, D.D.

THE VERB.

General Principles.

WE have thus completed the *nominal division* of our subject, having passed in review the *noun*, the *article*, the *adjective*, the *pronoun* and the *preposition*. I proceed to take up the second part, or the *verbal division*, comprising the *verb*, the *participle*, the *adverb*, the *conjunction* and the *interjection*.

The verb, considered in regard to its inflections, presents a difficult topic. The difficulty arises not from the nature of the verb itself, but from the diversity of views that prevail on the subject, and the absence of a generally recognised and authoritative guide. In itself, the English verb is very simple, but in most grammars, especially the older ones, the subject is very complex.

The chief cause of this complexity has been an attempt to assimilate the English verb to the forms and usages of other languages, especially the classical. Some who have avoided this mistake, have gone to an extreme in forcing on English grammar views and terms which belong to the Anglo-Saxon. My own view of grammar, namely, that it consists in an orderly and systematic exhibition of the facts and the laws of a language, requires me not only to shun

these faults, but also to find the inflexions and changes of the English verb within the limits of the English literature.

A verb etymologically considered is simply *a word*, the verb is *the word*. The fact seems to imply that the ancients, from whom our grammatical terms come, regarded the verb as the principal word. Whether precedence belongs in reality to the *verb* or to the *noun*, the designation in itself is not descriptive of the nature and functions of the verb. Let us therefore take a verb and study its office:—

Alfred *sleeps*.

Sleeps is universally acknowledged to be a verb. What is its essential character? "A verb," it has been said, "is a word which signifies to be, to do, or to suffer." The definition hardly applies to the statement that *Alfred sleeps*. But *Alfred sleeps* is a statement; a verb, then, may be defined as a word which, together with its subject, makes a statement; the form of words may be shortened and simplified by our saying that *a verb is a word which affirms or declares*. Affirmation, then, is the essence of a verb. All verbs affirm or declare something of their subjects. Put the definition to the test in the following instances: *Alfred is* (*exists*); *Alfred is sick*; *Alfred eats*; *Alfred reads his lesson*; *Alfred is reproved*.

In the phrase *Alfred sleeps*, we have only two words; of these, *sleeps* we have ascertained is a *verb*, and *Alfred*, we know, is a proper *noun*. We also know that *Alfred* is the subject to the verb *sleeps*. The simplest from then, in which a verb can appear, is in a sentence which consists only of a verb and its subject. Now if you look a little closely into the verb *sleeps*, you see that what is declared, namely *sleeping*, begins and ends with the subject, and does not pass beyond the subject. Verbs, the action of which does not pass beyond the subject, are called *intransitive* (Latin, in, *not*; and transeo, *I pass over*).

Instead of *sleeps* let us use the verb *loves*;

Alfred *loves*.

The act of *loving* does not end though it begins with Alfred. He who *loves*, loves some person or some thing. Add, then, *Thomas* to the sentence, as being necessary to complete it: *Alfred loves Thomas*. Here the action of the verb passes from *Alfred* to *Thomas*. A noun so circumstanced as is *Thomas*, grammarians have agreed to call an *object*. *Thomas*, then, is the object to the verb *loves*. Accordingly, here the action of the verb passes from the *subject* to the *object*. Verbs, of which the action passes from the subject to the object, are termed *transitive*. We have therefore ascertained two kinds of verbs.

INTRANSITIVE:	Alfred *sleeps*.
TRANSITIVE:	Alfred *loves Thomas*.

The form of the second sentence may be changed without any change in the sense; e. g., *Thomas is loved by Alfred*; the *object* has become the *subject*, the verb is altered, the sense remains essentially the same. In order to signify the change thus effected in the verb, grammarians use the term *voice*, and the verb in this last case is said to be in *the passive voice*; the form from which this passive voice was produced, is called *the active voice*. Here they are put together.

Transitive Verb	ACTIVE VOICE:	Alfred *loves* Thomas.
	PASSIVE VOICE:	Thomas *is loved* by Alfred.

Observe, that in the passive voice what was the object has become the subject. But there is no *object* in the intransitive example: *Alfred sleeps*. Consequently, the change cannot take place. It is only *transitive* verbs that can become *passive*. In strictness of speech, *intransitive* verbs can hardly be said to be of the active voice, for the active implies the passive as its counterpart, and if a verb is incapable of being passive, it should not be spoken of as *active*, but simply as *intransitive*. *Intransitive* verbs, however, sometimes appear constructed in the passive voice as if they were *transitive*. The passive voice is in English a compound form made up of parts of the verb *to be* and the *past participle*. Take, as an instance of the error I refer to, the following:

Their memorial is perished with them.—Ps. ix. 6.

To perish is an *intransitive* verb. As such it cannot appear in the passive voice. Consequently *is perished* is not good English. Instead of *is perished* it should have been *has perished*.

With these preliminary explanations, let us consider what leading changes a verb in English may undergo. Instead of saying *Alfred sleeps*, we may say *I sleep*. Here we have a change in the person of the *subject*, the *first* person *I* has taken the place of the *third* person *Alfred*. And observe the change in the *subject* has brought a change in the verb, the *s* of the third person being dropped. Again, instead of saying *Alfred sleeps*, we may say *thou sleepest*. Again the *verb* changes to meet a change in the *subject*. We seem, then, warranted in declaring that the verb is inflected in *person*; that is, that the verb undergoes changes corresponding with changes in the *person*.

Is the verb inflected in gender? No, for we equally say *Alfred* sleeps, and *Mary* sleeps; also the *men* sleep and the *women* sleep.

Is the verb inflected in number? Yes; for while we say *Alfred sleeps*, we say of more than one (for instance, Thomas and Alfred), that *they sleep*.

Our verbs, then, are inflected in *person* and in *number*. An affirmation, however, has reference not only to the *subject*, but also to that which is affirmed. Now that which is affirmed, as in *Alfred sleeps*, has reference to *time*; of *time* there are three great divisions—*time present*, *time past*, *time future*. *Alfred sleeps* is obviously *time present*. Can the verb *sleeps* change so as in itself to indicate *past time*? Yes; for we can say *Alfred slept*. The English verb then is inflected in *time*, or *tense*, which is the grammatical term for time.

But *Alfred sleeps* is a simple statement. Can the verb *sleep* be made to change so as to indicate a corresponding change in the manner of the declaration? *Sleep* is not susceptible of such a change. Consequently the English verb is not inflected in mood any more than in gender. In other words, strictly speaking, we have in English but one mood, the *indicative*, that is, the *mood* or *manner* which simply declares or affirms, as *Alfred sleeps*; *Alfred slept*.

There is, however, another form which the word *sleeps* passes into, namely sleep*ing*. *Sleeping* is called a *present participle*.

We may now, then, proceed to draw out a tabular view of the verb *to sleep*. In doing so, we must employ no form twice, otherwise we depart from the law of inflexion, which requires that there shall be a change of form for every change of tense.

The intransitive verb to sleep.

PRESENT TENSE.

Singular. Person.		*Plural.* Person.	
1.	I—	1.	We—
2.	Thou sleepest	2.	You—
3.	He sleeps	3.	They—

PAST TENSE.

1.	I slept	1.	We—
2.	Thou sleptest	2.	You—
3.	He—	3.	They—

PRESENT PARTICIPLE,—*Sleeping*.

By inflection, then, the English verb is reduced to six forms, the infinitive *to sleep*, the second and the third persons of the present tense, namely *sleepest* and *sleeps*; and the first person and the second person of the first tense, that is, *I slept*, *thou sleptest*, together with the participle *sleeping*. *Sleep* is an intransitive verb. Take instead, the transitive verb *love*, the number of independent parts remains the same. Or if you take such a verb as *sing*, where there are two forms connected with *past time*, namely *sung* and *sung*, you have only one additional form, making in all seven.

Hence it appears that the English verb is not only simple but defective in inflections. According to the law of inflection we cannot even fill up the persons of the *present tense*.

If *inflection* thus breaks down as our guide, let us consult *usage*. What does usage in regard to the blanks in our tabular view? Usage fills up those blanks; thus:—

PRESENT.		PAST.	
Persons singular.	*Persons plural.*	*Persons singular.*	*Persons plural.*
1. I sleep	1. We sleep	1. I slept	1. We slept
2. Thou sleepest	2. You sleep	2. Thou sleptest	2. You slept
3. He sleeps	3. They sleep	3. He slept	3. They slept

Now observe what it is that usage does here; look at the present and you will see that it repeats the root of the verb, that is, it repeats *sleep*. *Sleep*, then in the first person singular and in the three persons of the plural, is a mere repetition of the infinitive *sleep*. These repetitions, however, are made distinctive, and they

are made distinctive by the pronouns *I, we, you, they*; there is, therefore, no fear of the *third person plural* being confounded with the *first person singular*, because *sleep* has before it in the latter case *I*, as *I sleep*; and in the former, it has before it *they*, as *they sleep*. The same principle of repetition is observed in the *past tense*, where *slept* is repeated; and the same principle of distinction is pursued by means of the personal pronoun. Instead of inflection, then, the English verb is formed by repetition and pronominal distinction. The difference of the two plans may be made more apparent if I put by the side of the English, the corresponding Latin :—

Latin.		English.	
Inflexional Distinction.		*Pronominal Distinction.*	
Persons.	*Singular.*	*Persons.*	*Singular.*
1.	Dorm-*io*	1.	*I* sleep
2.	Dorm-*is*	2.	*Thou* sleepest
3.	Dorm-*it*	3.	*He* sleeps
	Plural.		*Plural.*
1.	Dorm-*imus*	1.	*We* sleep
2.	Dorm-*itis*	2.	*You* sleep
3.	Dorm-*iunt*	3.	*They* sleep.

The Latin, you see, has no personal pronouns, for the persons are denoted by the endings or inflexions of the verb; thus, *io* denotes the first person singular; *iunt*, the third person plural; &c. Whereas, in English, the distinction of persons is marked by the pronouns *I, thou, he*, &c. Hence the latter method of forming a verb may be called the *pronominal*, and the former may be called *inflexional*. Yet is the English not wholly without inflexions, as appears from the second and third person singular, in which the root *sleep* is changed into *sleepest* and *sleeps*. These inflexions are however, but little necessary, for the second person is sufficiently marked by *thou*, and the third person by *he*. Of these two inflexions indeed the former is rarely used, and the latter might be spared. There would thus seem to be a decrease of inflexional usage in the English tongue. Such a decrease has been going on from the time when the English left its Anglo-Saxon parent. Nor is the change to be regretted, for thereby the language gains in simplicity and adaptation. That the English once possessed inflexion in a more decided manner is clear from :—

THE PRESENT TENSE OF THE VERB, TO BE.

Persons.	*Singular.*	*Persons.*	*Plural.*
1.	I am,	1.	We are,
2.	Thou art,	2.	You are,
3.	He is,	3.	They are.

Here, including the infinitive *to be*, we have five separate forms for three which occur in the verb *to sleep*.

Usage, then, has led us to the acknowledgment of distinctive forms for the three persons of the *present* and the *past*. But having a complete present and a complete past tense, we are without a future. Is the English language without a future tense? By tense in grammar is meant a specific *form* corresponding to a specific *meaning* in relation to *time*. Thus, in Latin, amo is *I love*, but if I want to say *I will love*, I change amo into am*abo*. Does any such change take place in English? Unquestionably not; the term *love* of the present, remains *love* in the future. The English language, then, has no *future tense*. Nevertheless, the English people can express a future act, and this they do by the employment of a second verb, namely the verb *will* and the verb *shall*, as *I shall love, he will love*.

By means of other verbs, commonly called *auxiliaries*, we are able to express other varieties of meaning. These varieties, however, are so numerous, and in part so indeterminate and unfixed, as to defy the systematic arrangements of *tense* and *mood*. Here the very genius of the language seems to require that freedom from forms which is a marked feature in the character of those who employ it. The simple truth is, that the forms of the English verb are reducible to three, namely *sleep, sleeping, slept*. Of these three the first is either a noun verbally used, that is converted into a verb by the pronouns *I, we*, &c.; or, in what is called *the infinitive mood*, or, in its abstract form, it is very like a *noun*. We have then the noun *sleep*, used abstractedly as an *infinitive*, and used also affirmatively as a *verb* with the aid of the personal pronouns. This form *sleep* passes into *sleeping*, which is called a *present participle*, and which too is often used as a *noun*. The only part which has and retains an exclusively verbal force is the past form *slept*. Whatever be the nature of these three parts, certain is it that of only three parts does the English verb ultimately consist. Equally certain is it that, modify those parts as you may, you cannot do more than double them, and the additional parts gained by inflexion serve only to mark the persons. *Sleep, sleeping, slept*—there is the English verb. Etymologically you find in it only *two tenses, one mood*, and *one voice*—no *future*, no *subjunctive*, no *passive*. Logically other forms are possible. By combination, you may make a passive voice, but by combination you may make also sentences, paragraphs, chapters, a volume. In so simple a grammar, combination must be sparingly employed, otherwise you depart from its spirit, and instead of being guided by the facts of the language, are guided by heedless fancy, and an arbitrary will. If, for instance, you invent a *subjunctive* mood, why not invent a *potential*? and if you invent a *potential* mood, why not invent an *optative*?* The ideas involved in classical moods and tenses can be expressed in English; but in grammar, we seek for set forms, not possibilities of expression. And if you make use of *may* to form a *potential* mood, why not make use of *let* to form a *permissive* mood, and *must* to form a *compulsory* mood? And even if you so far gave reins to invention, you would find that instead of exhausting the subject by analysis, you had only brought on yourself difficulties which analysis could not solve nor classification arrange; for *might* the past form of *may* differs from *may* in signification, and *should* does not in meaning analogically follow *shall*. Indeed any attempt to compass the almost unlimited powers of the English verb within the narrow and stereotyped limits of a system of moods and tenses, is as futile as it is unwise. The Samson must not be bound; the man must not be wrapt in swaddling clothes.

EXERCISES IN PARSING.

Distinguish which are *nouns*, which *adjectives*, and which *verbs* in the following Exercises.

An a'bsent man often hears not when he is addressed. Do you intend to abse'nt yourself from school to day? A'bstract nouns are nouns from which all necessary qualities are supposed to be abstra'cted or taken away. If you would pronounce correctly, you must place the a'ccent on the right syllable. Those men acce'nt their words very badly. An a'ffix is a particle added to a word as *ful* in doubtful. They affi'xed a placard on the church-doors. By ce'ment you may ceme'nt objects together. A co'llect is a part of the church service. The churchwardens will coll'ect the free will offerings of the congregation.

In a similar way construct sentences out of the following words, which vary in their meaning according to the place of the accent.

Noun or adjective.	*Verb.*	*Noun or adjective.*	*Verb.*
Co'mpact	compac't	co'nvict	convi'ct
Co'mpound	compou'nd	co'nvey	conve'y
Co'ncert	conce'rt	de'sert	dese'rt
Co'nduct	condu'ct	di'scount	discou'nt
Co'nfine	confi'ne	de'scant	desca'nt
Co'nflict	confli'ct	di'gest	dige'st
Co'nsert	conse'rt	e'scort	esco'rt
Co'ntest	conte'st	e'ssay	essa'y
Co'ntract	contra'ct	e'xport	expo'rt
Co'ntrast	contra'st	ex'tract	extra'ct
Co'nvert	conve'rt	e'xile	exi'le.

Le malheur ne sortira jamais de la maison de celui qui rend le mal pour le bien.—*Salomon.*

L'ingratitude est un crime; mais celui qui n'oblige pas, crainte de l'ingratitude, ne veut donc placer ses bienfaits qu'à intérêt: il est peu généreux. Cette crainte même, poussée à l'excès, est inhumanité. L'homme vraiment généreux oblige sans songer à la reconnaissance: ce sont les affaires de l'obligé.—*Fontenelle.*

Les peuples les plus sages de l'antiquité, les Perses, les Lacédémoniens, les Athéniens, recevaient en justice l'action contre les ingrats.—*La Bruyère.*

Le trop grand empressement qu'on a de s'acquitter d'une obligation est une espèce d'ingratitude.—*La Rochefoucauld.*

L'ingratitude ne décourage pas la bienfaisance; mais elle sert de prétexte à l'egoïsme.—*Lévis.*

Il est d'une grande âme de repousser les injures par des bienfaits.—*Confucius.*

Les injures sont les raisons de ceux qui ont tort.—*J. J. Rousseau.*

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* A mood, in Greek grammar, expressive of a *wish*.

LESSONS IN GERMAN.—No. LVIII.

§ 54. PRONOUNS.

In German, as in other languages, will be found a number of those words, which, for the sake of convenience, are employed as the direct representatives of nouns. These are the pronouns They are divided, according to the particular offices which they perform, into six different classes: viz, : Personal, Possessive, Demonstrative, Determinative, Relative and Interrogative

§ 55. TABLE OF THE PRONOUNS.

Personal Pronouns.		*Possessive Pronouns.*	
Singular.	*Plural.*	*Singular.*	*Plural.*
Ich, I	Wir, We.	Mein, My.	Unſer, Our.
Du, Thou.	Ihr, Ye.	Dein, Thy.	Euer, Your.
Er, He.	Sie, They.	Sein, His.	Ihr, Their.
Sie, She.	Sie, They.	Ihr, Her.	
Es, It.	Sie, They.	Sein, Its.	

Indefinite Pronouns.	*Reflective and Reciprocal Pronouns.*
Man, one; a certain one.	Sich, Himself, Herself, Itself, Themselves.
Jemand, some one; somebody.	Einander, one another.
Niemand, no one; nobody.	
Jedermann, every one; everybody.	

Demonstrative Pronouns.	*Determinative Pronouns.*
Dieſer, This.	Der, That, That one, *He.*
Jener, That.	Derjenige, That, That person.
Der, This or That.	Derſelbe, The same.
	Selbiger, The same
	Solcher, Such.

Relative Pronouns	*Interrogative Pronouns.*
Welcher, Who, Which.	Wer, Who? was? What?
Der, That.	Welcher, Who? Which?
Wer, Who, He or she, who or that.	Was für, What sort of?

§ 56. PERSONAL PRONOUNS.

There are five personal pronouns; namely, ich, *(I)* which represents the *speaker* and is, therefore, of the *first* person; du, (*thou*) which represents the *hearer* or person *spoken to* and is therefore, of the *second* person; and er, (*he*) representing the person or thing *spoken of*, and, therefore, of the *third* person. They are declined thus:

	Singular.	*Plural*
	First person, all genders.	
N.	ich, I.	wir, we.
G.	meiner, mein, of me.	unſer, of us.
D.	mir, to me.	uns, to us.
A.	mich, me.	uns, us.
	Second person, all genders.	
N.	du, thou.	ihr, ye or you.
G.	deiner, or dein, of thee.	euer, of you.
D.	dir, to thee.	euch, to you.
A.	dich, thee.	euch, you.
	Third person, Masculine.	
N.	er, he.	ſie, they.
G.	ſeiner, or ſein, of him.	ihrer, of them
D.	ihm, to him.	ihnen, to them.
A.	ihn, him.	ſie, them.
	Third person, Feminine.	
N.	ſie, she.	ſie, they.
G.	ihrer, of her.	ihrer, of them.
D.	ihr, to her.	ihnen, to them.
A.	ſie, her.	ſie, them.
	Third person, Neuter.	
N.	es, it.	ſie, they.
G.	ſeiner, of it.	ihrer, of them.
D.	ihm, to it.	ihnen, to them
A.	es, it.	ſie, them.

§ 57. REMARKS OF THE PERSONAL PRONOUNS.

(1) The genitive, mein, dein, ſein, are the earlier forms. The others (meiner, deiner, ſeiner) are the ones now commonly used.

(2) When construed with the prepositions halben, wegen, and um—willen, (signifying *for the sake of, on account of*) these genitives are united with the preposition by the euphonic letters, et, or (in case of unſer and euer) simply e. Thus: meinetwegen, *on account of me;* um unſertwillen, *on account of us, &c.*

(3) The personal pronouns of the third person, when they represent things *without life*, are seldom, if ever, used in the dative, and never in the genitive. In such instances, the corresponding case of the demonstrative der, die, das, is employed: thus, deſſen, (*of this,*) instead of ſeiner; and deren, (*of these,*) instead of ihrer.

(4) The word ſelbſt or ſelber (*self, selves*) may, also, for the greater clearness or emphasis, be added not only to the pronouns, but even to nouns. Thus; Ich ſelbſt, *I myself*; die Leute ſelbſt the people *themselves.*

(5) Here, too, observe, that the personal pronouns have, also in the plural, a reciprocal force. Thus: ſie lieben ſich, they love *one another.* But as ſie lieben ſich, for example, might signify, they love *themselves*, the Germans, also, use the word einander, (*one another*) about which there can be no mistake: as, ſie lieben einander. (§ 60.)

(6) In polite conversation, the Germans use the *third person plural*, where we use the *second.* Thus: Ich habe Sie geſehen, I (have seen you. To prevent misconception, the pronouns thus used are written with a capital letter; as, ich danke Ihnen, I thank (*them*) you. A similar sacrifice of Grammar to (supposed) courtesy, may be found in our own language. For we constantly use the *plural* for the singular; thus: "How are *you?*" instead of "How art *thou?*" The Germans proceed just one step beyond this, and besides taking the plural for the singular, take the *third* person for the second. With them, our familiar salutation "How do *you* do?" would be, "How do *they* do?"

(7) It must be observed, however, that the *second* person singular, Du, is always, as in English, used in addressing the Supreme Being. It is, also, the proper mode of address among warm friends and near relatives. But it is, also, used in angry disputes, where little regard is paid to points of politeness. The *second person* plural is employed by superiors to their inferiors. The third person *singular* er, ſie, is used in the same manner, that is, by masters to servants, &c.

(8) The neuter pronoun (es) of the third person singular, like the words *it* and *there* in English, is often employed, as a nominative, both before and after verbs, singular and plural, as a mere *expletive*; that is, more for the purpose of aiding the *sound* than the *sense* of the sentence. In this use, moreover, it is construed with words of all genders. Thus: Es iſt der Mann, *it* is the man; Es iſt die Frau, *it* is the woman; Es ſind Männer, *they* are men; Es donnert; *it* thunders; Es folgten viele, *there* followed many, &c.

When Es is thus used with a personal pronoun, the arrangement of the words is precisely the reverse of the English. Ex: Ich bin es, It is I. Du biſt es, It is thou Sie ſind es, It is they, &c.

LESSONS IN GERMAN PRONUNCIATION.—No. V.

Die ſieben Kindlein.

Dee zee'-ben kint'-line.

Am frühen Morgen, als die Dämmerung aufging,
åm frü'-hen morg'-en, åls dee dem'-mai-röönk ouf'-gink,

erhob ſich ein frommer Hausvater mit ſeinem Weibe
err-hope' zich ine from'-mer house'-fah-ter mit zi'-nem vi'-bai

von dem nächtlichen Lager, und ſie dankten Gott für
fon dem neht'-lich-chen lah'-gher, döönt zee dånk'-ten got fü'r

den neuen Tag und die Stärkung des Schlummers.
dain noi'-en tåhch döönt dee sterr'-köönk des shlöörn'-mers.

Das Morgenroth aber ſtrahlte in das Kämmer-
Dåss morg'-en-rote' åh'-ber ſtrahl'-te in dåss kem'-mer

lein, und sieben Kindlein lagen in ihren Betten und
line, öönt zee'-ben kint'-line lâh'-ghen in ee'-ren bet'-ten öönt
schliefen.
shlee'-fen.

Da sahen sie die Kindlein an nach der Reihe, und
Dâh zâ'-hen zee dee kint'-line ân nâch dair ri'-hai, öönt
die Mutter sprach: es sind ihrer sieben an der Zahl!
dee mööt'-ter sprâhch: ess zint ee'-rer zee'-ben ân dair tsâhl!
Ach, es wird uns hart fallen, sie zu ernähren, also
âch, ess virrt öönss hârt fâl'-len, zee tsoo err-nai'-ren, âl'-zo
seufzte die Mutter, denn es war eine Theurung im
zoifts'-tai dee mööt'-ter, den ess vâhr i'-nai toi'-röönk im
Lande.
lân'-dai.

Der Vater aber lächelte und sprach: Siehe,
Dair fâh'-ter âh'-ber lech'-chel-tai öönt sprâhch: Zee'-hai,
liegen sie nicht und schlummern alle sieben? und
lee'-ghen zee nicht öönt shlööm'-mern âl'-lai zee'-ben? öönt
haben rothe Wangen allzumal, und es fleußt auch
hâh'-ben ro'-tâi vâng'-en âl'-tsoo-mâhl, öönt ess floisst ouch
von neuem das Morgenroth über sie her, daß sie noch
fon noi'-em dâss morg''-en-rote' ü'-ber zee hair, dâss zee nöch
schöner erscheinen und wie sieben blühende Röslein.
shö'-ner err'-shi'-nen öönt vee zee'-ben blü'-hen-dai rö'-ss'-line.
Mutter, dies zeuget uns ja, daß Er, der das
Mööt'-ter, deess tsoi'-ghet ööns yâh, dâss air, dair dâss
Morgenroth machet und den Schlaf sendet, getreu
morg''-en-rote' mâch'-chet öönt den shlâhf zen'-det, gai-troi'
ist und ohne Wandel.
ist öönt o'-nai vân'-del.

Und als sie nun aus dem Kämmerlein traten, da
öönt âlss zee noon ouss dem kem'-mer-line trâh'-ten, dâh
standen an der Thür vierzehn Schuhe in einer Reihe,
stân'-den ân dair tü'r feer'-tsain shoo'-hai in i'-ner ri'-hai,
immer kleiner und kleiner, je zwei für ein jegliches
i'n'-mer kli'-ner öönt kli'-ner, yai tswi fü'r ine yaich'-lich-es
Kindlein. Da sah die Mutter sie an, daß ihrer so
kint'-line. Dâh zâh dee mööt'-ter zee ân, dâss ee'-rer zo
viele waren, und sie weinte.
fee'-lai vâh'-ren, öönt zee vi'-nai-tai.

Der Vater aber antwortete und sprach: Mut-
Dair fâh'-ter âh'-ber ânt'-vor-tai-tai öönt sprâhch: Mööt'-
ter, was weinest du? Haben sie doch alle sieben die
ter, vâss vi'-nest doo? Hâh'-ben zee döch âl'-lai zee'-ben dee
runden und muntern Füßlein empfangen, wie sollr-
röön'-den öönt möön'-tern fü'ss'-line emp-fang'-en, vee zol'-
ten wir denn um die Hüllen uns ängsten! Haben
ten veer den ööm dee hül'-len ööns eng'-sten! Hâh'-ben
doch die Kindlein Vertrauen zu uns, wie sollten wir
döch dee kint'-line ferr-trow'-en tsoo öönss, vee zol'-ten veer
es denn nicht zu dem haben, der mehr vermag, als
ess denn nicht tsoo dem hâh'-ben, dair mair ferr-mâhch' âlss
wir verstehn. Siehe, seine Sonne kommt! Wohlan,
veer ferr-steyn'. Zee'-hai, zi'-nai zon'-nai komt! Vole-ân',
laß uns auch unsern Tagelauf wie sie mit fröhli-
lâss öönss ouch öön'-zern tâ'-gai-louf vee zee mit frö'-lich-
chem Antlitz beginnen.
chem ânt'-lits bai-ghin'-nen.

Also redeten sie und wirkten, und Gott segnete
âl'-zo rai'-dai-ten zee öönt virrk'-ten, öönt got zaich'-nai-tai
ihre Arbeit, das sie genug hatten sammt den Kin-
ee'-rai âr'-bite, dâss zee gai-nöch hât'-ten zâmt dain kin'-
dern, denn der Glaube erhebet den Muth und die
dern, den dair glou'-bai err-hai'-bet dain moot öönt dee
Liebe gewähret Stärke.
lee'-bai gai-vai'-ret sterr'-kai.

VOCABULARY.

sieben, seven	Wandel, change, walking, doing, acting
Dämmerung, *f.* dawn	stehen, to stand
dämmern, to dawn	Thür, *f.* door
aufgeben, to rise	vierzehn, fourteen
Hausvater, *m.* father of a family	je zwei, each two
nächtlich, nightly	ein jegliches, each
Nacht, *f.* night	viel, much, many
Lager, *n.* couch, camp	rund, round
danken, to thank	munter, lovely
stärken, to strengthen	Fuß, *m.* foot
Stärkung, *f.* strengthening	empfangen, to receive
Stärke, *f.* strength	sich ängsten, to fret
Gott, *m.* god	Angst, *f.* anxiety, terror
Schlummer, *m.* slumber	Hülle, *f.* covering, shell
strahlen, to beam	Vertrauen, *n.* confidence
Bett, *n.* bed	dem .... der, to him, to the one... who
schlafen, to sleep	vermögen, to be able to do
Reihe, *f.* turn, line	mehr, more
nach der Reihe, one after the other	verstehen, to understand
ihrer, *Genitive* of them	Sonne, *f.* sun
Zahl, *f.* number	wohlan, well then
hart, hard, difficult	lassen, to let, leave
Theurung, *f.* famine, dearth	Lauf, *m.* course
theuer, dear	fließen, to flow
allzumal, all together	sie, *f.* she, her
erscheinen, to appear	Antlitz, *n.* countenance
blühen, to bloom	wirken, to be active, to act
zeugen, to prove, witness, testify	segnen, to bless
der, die, das, *relative pronoun*, who, which	Arbeit, *f.* work, labour
machen, to make	Glaube, *m.* faith, belief
getreu, faithful	Muth, *m.* courage
ohne, without	gewähren, to grant, bestow.

LESSONS IN GEOLOGY.—No. XXXVII.

By THOMAS W. JENKYN, D.D., F.R.G.S., F.G.S., &c.

CHAPTER III.

ON THE INFLUENCE OF ATMOSPHERIC AGENTS ON THE EARTH'S CRUST.

SECTION VI.

ON THE EFFECTS OF SNOW AVALANCHES.

In the temperate zones of the earth it is found that when the temperature of the air is either near the freezing point or below it, the moisture that is in the atmosphere falls in the form of snow instead of rain. In our climate, this takes place, chiefly, during winter.

In countries where there are very elevated mountains, you need not wait for the revolution of the year, to observe the effects of different degrees of temperature. Meteorologists have demonstrated, that in every country, the atmosphere becomes colder as we ascend it, until the cold reaches a great intensity. As a consequence of this law of the atmosphere, a traveller, by merely ascending the slopes of a mountain towards its higher regions, will pass through every variety in the successive gradations of the seasons of the year. The stupendous ranges of the Himalayas in Asia, and of the Andes in South America, present in one continuous surface all the climates of the earth, from the glowing vegetation of the tropics to the eternal snow of the Poles. The plains around the base of such mountains, and the slopes on their different spurs, are

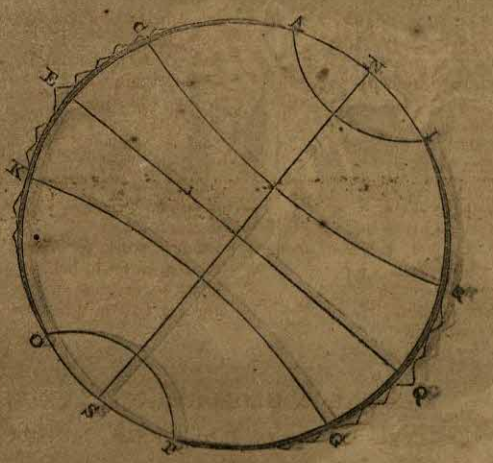
covered with the verdure of summer, while frozen winter reigns undisturbed on the summits.

The inhabitants of snow-capped mountains observe, that, no snow at all falls in the plains. Higher up the mountains, the snow falls occasionally, but rarely. Higher up still, the snow remains a great part of the year on the surface, but melts with the increase of the summer temperature. At last there is a point, a horizontal, but somewhat curved, line where the snow never appears to melt, but remains throughout the year. This is the line that is called, in Physical Geography, the line of perpetual congelation, or the zone of perpetual snow. Upwards from that point or line, the covering of the mountain, or, speaking figuratively, its superficial stratum, is always snow.

Between the tropics, snow never falls, except on the tops of very elevated mountains. In these hot regions the mean height of the line of perpetual snow is about 15,207 feet above the level of the sea. This means, that were you to ascend a tropical mountain, it must be higher than 15,207 feet before you would come to the point or line where the snow never disappeared.

This line is highest exactly at the equator. Were it possible, either by travelling or by ballooning, to follow this line of snow, from the equator towards north or south, it would be found to decrease constantly, but variably, from the equinoctial mountain to either pole. The decrease continues until at last the line of perpetual snow is the surface of the earth on a level with the sea; and ultimately, within the arctic and antarctic circles, the permanent frost enters deeply into the crust of the earth. This gradual decrease of the line is represented in fig. 80.

Fig. 80.



The Line of Perpetual Snow.

N, the north pole; S, the south pole; E Q, the equator; C R, the tropic of Cancer; K G, the tropic of Capricorn; A I, the artic circle; O P, the antarctic circle; the inner circle N E S Q is the circle of the globe; the outer circle with the mountains rising above it, is the line of perpetual snow.

The two curved lines on each side of the great circle of the globe, as represented in fig. 80, show the gradual decrease of elevation in the line of perpetual snow, from the equator, where it is highest, to the arctic and antarctic circles, where it is on a level with the ocean. Yet, though the decrease is gradual, it is not uniform. The line, if it were represented on a map, as you will find it in maps of Physical Geography, would show that it has various flexures, which are regulated by proportions and alternations of land and water in that region. Of the variations in this line, a few examples from Asia, America, and Europe, will suffice for the purpose of this lesson.

One of the most remarkable instances of this variation is found in the Himalayas in Central Asia. In latitude 31° on the south side of the Himalayas, the line stands at 12,981 feet above the level of the sea. But, on the north side, the line is 16,620 feet. The reason is, that, on the north side of this stupenduous range, the heat, radiating from a great continent, so moderates the cold, as that on the northern slopes of the mountains, there are meadows and cultivated fields on an elevation higher than Mont Blanc in Europe.

In the Andes, near Quito, in South America, the lowest level to which the line comes is 15,795 feet above the level of the sea. This is higher than the highest peak of Mont Blanc. From that point towards both north and south it varies irregularly. On the mountains of Mexico, in 18° north latitude, the line comes down to 14,772 feet. To the south, in some parts of the western Cordilleras, it rises to 18,000 feet; and, on the same mountains, in the neighbourhood of Valparaiso, it sinks again to 12,780 feet.

The highest mountain in Europe is Mont Blanc (pronounced Mong Blong), whose elevation above the level of the sea is about 15,500 feet. In this mountain the line of perpetual snow is at the elevation of 8,500 feet. Hence, 8,500 subtracted from 15,500, the whole height, shows that this mountain is clad with snow from its summit to 7,000 feet below the summit.

In the arctic and antarctic regions, the long summer day of six months' sunshine is not sufficient to melt the snow and ice that have accumulated in the long winter. It is, therefore, not surprising that, at a certain height, on the tops of elevated mountains, snow should always lie.

When the summer never melts the snow, or melts it but partially, the mass of flakes which every snow storm deposits must necessarily accumulate and become thicker and thicker. This would be the invariable result, and snow mountains would become higher and higher, if the Author of the laws of snow had not provided some counteraction. This counteraction takes place by partial thaws, by evaporation, by weight and pressure, by the formation of ice and glaciers, and by the disruption and removal of portions of such masses of ice,—which will form the subject of our next lessons.

After snow has rested for the greatest part of the year on the summit of a mountain, and then has been melted away by the increased temperature of the season, the surface rocks are always found shivered and splintered in a very extraordinary manner. Scoresby found this to be the case at Spitzbergen, and Darwin in the Andes, and in Terra del Fuego. Mr. Darwin says, that the quantity of crumbling stones found on such summits in the Cordilleras was enormous. After the disappearance of the snow from the upper ledges of precipices, large masses of the crumbled rock slide down the mountain, and cover with their debris the snow drifts that lie in the valleys.

In the Alps and other high mountains, the snow settles on the slopes and the declivities of the hills, or drifts, and lies in valleys and ravines that slant and dip very rapidly. When such accumulations of snow move from their position, either by increase of weight, or by the melting of the lower portions, the moving mass is called an avalanche.

An avalanche consists of an immense mass of snow and of ice derived from melted snow recongealed. These accumulations collect, on the upper ledges and slopes of the mountain, to such an extent that the inclined plane on which they rested can no longer support their weight. They then slide off into the valleys below, and rush with such force and velocity as to tear and sweep everything before them, fill up valleys with ruin, and stop the courses of rivers.

Our next engraving, fig. 81 represents the Alps, and shows the manner in which the snow rests upon the declivities, and in the narrow ravines of the mountains. In studying it, you will keep in memory, that the highest peak represents a perpendicular height of above 15,000 feet, or about three miles in vertical elevation—and that the same proportion must be applied to the declivities, and the ravines covered with snow.

In various parts of this engraving, especially to the right of it, you find various accumulations of snow resting upon great declivities of the mountains. Should the lower portions of these become loosened from the masses above, their rush to the valleys below would be terrific. As they pass over stony slopes, and tracts of cultivated ground, they carry with them trees and animals, plants, and stones, human beings, and remains of houses, and lay them in one heap of heterogeneous detritus at the bottom.

It is on this account that avalanches are regarded in geology as great agents of revolution in the external crust of the globe, bringing down slowly but continually from great

heights large masses of rock, alpine plants, and platforms of earthy soil; and continuing this process for ages upon ages, they contribute to reduce the lofty mountain to a plain, and supply valleys with suitable soil for vegetation for the use of man.

There are four different kinds of avalanches,—the drifting, the rolling, the sliding, and the glacial.

1. Drifting Avalanches.—Drifting avalanches consist of loose, fresh-fallen snow. They are formed when a heavy snow storm has fallen on the higher portions of the mountain in calm weather. This mass, before it has acquired consistency, is sometimes put in motion by a strong wind. Or when such an accumulation of snow is formed upon an inclined plane, and has acquired weight sufficient to detach it from the steep declivity on which it lay, it becomes dislodged and rushes downward.

Fig 81.

The Snow and Glaciers of Mont Blanc.

When once the drifting avalanche has moved, the mass, accumulating as it descends, is driven from one slope to another, or from one slanting ravine to another below it, it rushes from point to point, bringing down with it an incredible volume of snow and fragments of rock to the lower valleys. They sometimes rush with the velocity of lightning. This velocity is such that by the compression of the air, which it produces, it overturns houses and splinters rocks. This blast of the avalanche resembles what is called "the wind" of a cannon ball. It rushes off on all sides with a force sufficient to shiver the largest forest trees, overturn houses, and fling down huge fragments of rocks.

Avalanches of the drift description have been known to fall down to the distance of ten miles, from the point where they were first detached from the high snow bed, into the valley where they deposed their burden of ruins.

2. Rolling Avalanches.—Rolling avalanches take place most frequently after a thaw. The snow, in this case, has become so clammy and adhesive that it unites in large hard pieces, and takes the form of a large compact ball. Such a huge ball of clammy snow, put in motion perhaps by its own weight, it begins slowly to descend the slant of the hill, and as it rolls downward, all the snow lying in its course sticks to it. As the mass increases in volume and weight, it increases in rapidity, dashes against trees, projecting rocks, and human dwellings, and mingles them all in one widespread heap of destruction.

In 1749, a village called Ruaras, in the valley of Tawetsch, among the Grisons, was visited with an avalanche which covered all its dwellings, and also removed them from their usual sites. This avalanche fell in the night, but, unlike the drifting avalanche, it descended so noiseless that the inhabitants in their beds were not aware of either its effects or its existence. Next morning, one hundred human beings were dug out in the ruins, sixty of whom were alive. In 1806, at Val Calanca, of the same canton, an avalanche transported an entire forest from one side of the valley up the slope of the opposite hill, and planted a fir tree upon the roof of the minister's house.

These rolling avalanches are not so destructive as others are, as their movements are generally more slow. Where they are common, the inhabitants know their localities and

courses, and by observing the weather, they can generally foretell their coming.

3. Sliding Avalanches.—What are called sliding avalanches are formed on the lower declivities and the more gentle slopes of the mountains. Their fall generally takes place at the spring of the year, after the whole mass has been partially melted, and again frozen into a consistency somewhat compact. When a real spring thaw takes place, the layer of snow that lies next to the surface of the earth begins to dissolve and melt away. In this manner the bond of connection between the over-lying mass and the base which supported it, is removed. The whole superincumbent accumulation of snow then begins to move slowly down the inclined plane, which has now been made slippery by the thaw.

These avalanches are sometimes so nicely poised, that the muleteers and carriers of Switzerland are obliged to use the utmost caution against every movement that is calculated to disturb these imminent masses. When their roads lie a small distance below these dangerous accumulations, they proceed as rapidly as they well can, but they carefully avoid every kind of noise—they even avoid speaking, and they muffle the bells on the necks of the mules, lest the slightest vibration should be given to the air in the neighbourhood of the threatening avalanche.

4. Glacial Avalanches.—The glacial avalanches are sometimes called ice avalanches, because they consist of nothing but pieces and fragments of ice which had previously constituted parts of a glacier, such as is represented in the stream of ice, a little to the left of the centre of our last engraving. The formation and the operations of these glaciers will be described in some future lessons.

The fragments of ice which constitute glacial avalanches have been detached from the parent glacier by the operations of summer heat. They are formed in deep ravines of great declivity. They move very slowly till they come to the ledge of a precipitous rock, which sometimes they overhang, as a terrific mass, accumulating ice. As they are precipitated from one high valley into another, their fall sounds like thunder, and their force against projecting rocks shatters them to fragments.

The spectacle of their fall is magnificent. As they roll down a rugged declivity, their velocity breaks them frequently into an infinite number of small, white, and shining pieces. When seen from a distance, they resemble a cataract of a mountain torrent rushing down the slope of a hill, not in water, but in foam.

Among the Alps, especially in the Grindelwald and among the glens of the Jungfrau (pronounced yoóngfraoo), they may be frequently seen; but the thunder which accompanies their fall in the high ravines is heard almost every day in summer.

The action of glacial avalanches has been illustrated in many disastrous instances.

One of the glens of the Alps is called the valley of the Visp, in which stands the picturesque village of Randa. The village is situated at the base of a precipitous mountain mass, which rises almost perpendicularly near nine thousand feet high, and which forms part of the celebrated snow mountain called the Weisshorn. It is so high as to be completely encompassed by glaciers. In 1819, one of these glaciers had reached the high ledges of this mountain, and projected considerably over the brink of this tremendous precipice. In one instant, an enormous fragment of it broke off and rushed down to the Vispthal with terrific velocity. The masses of ice that fell, and the quantity of rocky fragments and debris that they brought down with them were sufficient to form a layer 150 feet deep, 4,600 feet in length, and 1000 feet in breadth; that is, about a mile long and nearly a quarter of a mile broad.

The avalanche, in its fall, did not touch the village of Randa; but the air was compressed to such a degree, that the blast rushed against the buildings of the village, blew some of the houses to fragments as if they had been of pasteboard. One gust struck against the eastern spire of the convent of Dissentis, dislodged the upper part of it, and carried a portion of it to the distance of a quarter of a mile.

LESSONS IN GEOGRAPHY.—No. XXVII.

MAP OF SOUTH AMERICA.

South America has on the map the appearance of the vertical section of an irregularly shaped pear. The stalk end is broken off at the island of Terra del Fuego, where it meets the junction of the Atlantic and Pacific Oceans, on the south. It is bounded by the Caribbean sea, on the north; by the Straits of Magellan, on the south; by the Pacific Ocean, on the west; and by the Atlantic Ocean, on the east. It is connected with the North American continent at the north-west point by the Isthmus of Panama, and includes the narrowest portion of that isthmus. The most northerly point of this continent is Point Gallinas, in New Granada, in lat. 12° 30′ N. nearly and long. 71° 53′ W. nearly; the most southerly point, including Terra del Fuego and the adjacent islands, is Cape Horn, in lat. 55° 59′ S. and long. 67° 12′ W.; the most westerly point is Parina Point, near the Lobos Islands, in lat. 4° 43′ S. and long. 81° 11′ W.; and the most easterly point is the entrance to the river Goyana, near Olinda, in lat. 7° 31′ S. and long. 34° 47′ W. The length of this continent from north to south is about 4,800 miles; and its greatest breadth about 3,300 miles. The surface of South America, including its adjacent islands south of the equator, is about 8 millions of square miles; and the population is about 16 millions; hence this continent contains about 2 inhabitants to every square mile.

The *islands* considered as belonging to South America are few and unimportant. The largest, viz. Terra del Fuego, is considered sterile and scarcely habitable. This island is divided by narrow straits, crowded with islets, into three parts; the eastern part, which is the largest, is called King Charles' Land; the middle, which is the smallest, Clarence island; and the western part, Desolation Land. Between the continent and this triple island lies the long, narrow, and winding *strait*, called by the name of Magellan (or Magalhaens), the navigator who first sailed through it and discovered the passage to the Pacific Ocean. The southern coast of Terra del Fuego is broken into numerous islets. Staten Land is an island of a larger size, lying off its eastern coast, and separated from it by the *strait* of Le Maire. On one of the smaller islands, called L'Hermite island, stands the celebrated Cape Horn, once deemed "infamous for tempests," but now reckoned more passable than the strait of Magellan. About 200 miles east of the entrance to this strait, lie the Falkland Islands, one of which is called the East Falkland, and the other the West, between which runs the Falkland channel; besides these this group consists of 200 smaller islands, the area of the whole being about 6,000 square miles. About 600 miles east of these islands, lies the South Georgian group, the largest of which is 90 miles long by 10 miles broad, a depôt for the seal and whale fishery. The Galapagos islands are situated on the equator, about 700 miles west of the state called Equador, to which they belong. The Lobos islands and the Chinca islands, celebrated for their guano, lie off the west coast of the state of Peru, to which they belong. The island of Juan Fernandez, on which Alexander Selkirk was shipwrecked, and whose narrative gave rise to the story of Robinson Crusoe, written by Daniel Defoe, lies off the west coast of the state of Chili. The Patagonian Archipelago, including the islands of Chiloe, Chonos, Wellington, Madre de Dios, Hanover, Adelaide, &c. lies west of the country or region from which it receives its name. North-east of Cape St. Roque, the easternmost point of Brazil, lie the islands of Fernando Noronha and Rocas; and north of the entire continent lie the West Indies in the Caribbean sea, as described in a former lesson.

Of *inland seas* in this continent there are none; and the *Gulfs* and *Bays* are small and unimportant. At the north-west corner, where it joins North America, are found on the Pacific side, the Bay of Panama and the Gulf of St. Miguel; on the Atlantic side and to the north of it, are the Gulf of Darien, the Gulf of Venezuela, the Gulf of Triste, the Gulf of Paria, the mouth of the Orinoco, the mouth of the Amazon, and the mouth of the Maranham. On the east of the continent are the bay of Todos Santos, the bay of Espirito Santo, the mouth of the River Plate, the gulf of San Matias and the gulf of St. George. On the west, Lord Nelson strait, the gulf of Trinidad, the gulf of Penas, the bay of Morena, the bay of Pisco, the gulf of Guyaquil, and the bay of Choco.

COUNTRIES, KINGDOMS, EMPIRES, AND STATES IN SOUTH AMERICA.

Countries.		Capitals.	Latitudes.	Longitudes.	Present Ruler.	Form of Government.
New Granada	Istmo	Panama	80° 58′ N.	79° 19′ W		
	Magdalena	Cartagena	10 26	75 37		
	Cauca	Popayan	2 26	76 40		Republican.
	Cundinamarca	Sta. Fe, Bogota	4 36	74 14		
	Boyaca	Pamplona	7 20	72 58		
Venezuela	Zulia	Maracaybo	10 39	71 45		
	Venezuela	Caraccas	10 30	67 1		
	Maturin	Cumana	10 28	64 15		Republican.
	Orinoco	Angostura	7 59	63 45		
Equador	Equador	Quito	0 13 S	78 22		
	Asuay	Cuenca	2 55	79 13		Republican.
	Guyaquil	Guyaquil	2 12	79 40		
Brazil	Guiana	Villa Novada				
	Solimoens	Tere	1 58	65 10		
	Para	Para	1 28	48 30		
	Maranham	Itapicur	3 50	44 20		
	Piauhy	Oeyras	2 40	50 0		
	Seara	Seara	3 43	38 34		
	North Rio Grande	Natal	3 56	37 20		
	Parahyba	Parahyba	7 0	34 50		
	Pernambuco	Pernambuco	8 4	34 53		
	Goyas	Villa Boa	16 20	50 0		
	Matto Grosso	Villa Bella	14 56	59 58	Pedro II.	Limited Monarchy.
	Seregippe	Seregippe	11 0	38 30		
	Bahia	St. Salvador	13 5	38 28		
	Ilheos	Ilheos	14 47	38 59		
	Espirito Santo	Espirito Santo	20 19	40 23		
	Seguro	S. Jose P. Alegre	19 20	39 40		
	Rio Janeiro	Rio Janeiro	22 54	43 16		
	Minas Geraes	Villa Rica	20 30	43 30		
	Sao Paulo	S. Paulo	23 30	46 20		
	South Rio Grande	Portalegre	30 0	51 0		
	St. Catherina	S. Catherina	27 15	47 0		
Independent States	Paraguay	Assuncion	25 26	57 50		
	Uruguay	Monte Video	34 54	56 16		Republican.
Peru	Libertad	Truxillo	8 6	78 56		Republican.
	Junin	Caxabamba	10 1	76 58		
	Lima	Lima	12 2	76 59		
	Ayâcucho	Guamanga	13 0	74 10		
	Cuzco	Cuzco	13 31	72 13		Republican.
	Puno	C. de Puno	15 59	70 15		
	Arequipa	Arequipa	16 20	71 50		
Bolivia	Moxos	S. Ignacio	14 15	65 17		
	La Paz	La Paz	16 20	68 30		
	Santa Cruz	Santa Cruz	17 58	62 25		
	Cochabamba	Cochabamba	17 10	65 35		
	Charcas	Chuquisaca	19 1	64 33		Republican.
	Chiquitos	Marco	16 20	58 20		
	Potosi	Potosi	19 33	66 15		
Chili	Copiapo	S. Francisco	27 15	70 0		
	Huasco	Huasco	28 10	71 0		
	Coquimbo	Coquimbo	29 54	71 19		
	Cuscos	S. Raphael de Rosa	36 30	72 0		
	Santiago	Santiago	33 27	70 44		
	Colchagua	S. Fernando				Republican.
	Conception	Conception	36 49	73 5		
	Quillota	Quillota	33 0	71 30		
	Valdivia	Valdivia	39 50	73 35		
	Chiloe	Castro	42 41	73 36		
La Plata	Buenos Ayres	Buenos Ayres	34 36	58 25		
	Chaco	S. Yago				
	Salta	S. Felippe	32 30	65 0		
	Tucuman	S. Miguel	27 0	65 10		
	Corrientes	Corrientes	27 30	58 30		
	Entre Rios	Santa Fe	31 30	61 0		Republican.
	Mendoza	Mendoza	32 40	69 30		
	Cordova	Cordova	32 0	63 59		
Patagonia	San Joseph	José	42 40	64 0		
	Mid. East Coast	Port St. Julian	49 8	67 44		
	South East Coast	Port Desire	47 45	66 4		
Islands	Terra del Fuego	York Minster	55 25	70 3		
	Falklands	Port Egmont	51 22	60 1	Victoria I.	Limited Monarchy.
	Georgia	Cape North	54 5	38 15		
	Patagonian Archipelago	San Carlos	41 52	73 54		
	Juan Fernandez	Afuera	33 49	80 34		
	Lobos		7 3	80 41	Ramon Castilla	Republican.
	Galapagos	Cape Berkley	0 4	91 22	General Ascasabi	Republican.

LESSONS IN FRENCH.—No. LXVIII.

By Professor Louis Fasquelle, LL.D.

LIST OF IRREGULAR VERBS, &c. (*continued from page* 238).

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
Repentir (se)	se repentant	je me repens	je me repen-	je me repentis	je me repenti-	je me repenti-		je me repente	je me repen-
2 *to repent* ref.	repenti, *f.* e.	*see* SENTIR	[tais		[rai	[rais	repens-toi		[tisse
Reprendre, 4	reprenant	je reprends	je reprenais	je repris	je reprendrai	je reprendrais		je reprenne	je reprisse
to take again.	repris, *f.* e.	*see* PRENDRE					reprends		
Reproduire,	reproduisant	je reproduis	je reprodui-	je reproduisis	je reproduirai	je reproduirais		je reproduise	je reproduisisse
4. *to reproduce*	reproduit, *f.* e.	*see* CONDUIRE	[sais				reproduis		
Requérir, 2.	requérant	je requiers	je requérais	je requis	je requerrai	je requerrais		je requière	je requisse
to require	requis, *f* e.	*see* ACQUÉRIR					requiers		
Résoudre, 4.	résolvant	je résous	je résolvais	je résolus	je résoudrai	je résoudrais		je résolve	je résolusse
to resolve	résolu, résous	*see* ABSOUDRE					résous		&c.
Ressentir, 2.	ressentant	je ressens	je ressentais	je ressentis	je ressentirai	je ressentirais		je resente	je ressentisse
to resent	ressenti, *f.* e.	*see* SENTIR					ressens		
Ressortir, 2.	ressortant	je ressors	je ressortais	je ressortis	je ressortirai	je ressortirais		je ressorte	je ressortisse
to go out again	ressorti, *f.* e.	*see* SORTIR					ressors		
Ressouvenir,	se ressouve-	je me ressou-	je me ressou	je me ressou-	je me ressou-	je me ressou-		je me ressou	je me ressou-
(se) *to remember.* ref.	[nant	[viens	[venais	[vins	[viendrai	[viendrais	ressouviens-	[vienne	[vinsse
	ressouvenu, *f* e	*see* TENIR					[toi		
Restreindre	restreignant	je restreins	je restrei-	je restreignis	je restreindrai	je restrein-		je restreigne	je restrei-
4. *to restrain*	restreint, *f.* e.	*see* CEINDRE	[gnais			[drais	restreins		[gnisse
Retenir, 2. *to*	retenant	je retiens	je retenais	je retins	je retiendrai	je retiendrais		je retienne	e retinsse
retain	retenu, *f.* e,	*see* TENIR					retiens		
Retraire, 4.	retrayant	je retrais	je retrayais		je retrairai	je retrairais		je retraie	
to redeem	retrait, *f.* e.	*see* TRAIRE					retrais		
Revenir, 2. *to*	revenant	je reviens	je revenais	je revins	je reviendrai	je reviendrais		je revienne	je revinsse
return	revenu, *f.* e.	*see* VENIR					reviens		
Revêtir, 2. *to*	revêtant	je revêts	je revêtais	je revêtis	je revêtirai	je revêtirais		je revête	je revêtisse
clothe	revêtu, *f.* e.	*see* VÊTIR					revêts		
Revivre, 4. *to*	revivant	je revis	je revivais	je revécus	je revivrai	je revivrais		je revive	je revécusse
live again	revécu						révis		
Revoir, 3. *to*	revoyant	je revois	je revoyais	je revis	je reverrai	je reverrais		je revoie	je revisse
see again	revu, *f.* e.	*see* VOIR					revois		
Rire, 4 *to*	riant	je ris	je riais	je ris	je rirai	je rirais		je rie	je risse
laugh	ri	tu ris	tu riais	tu ris	tu riras	tu rirais	ris	tu ries	tu risses
aux. avoir		il rit	il riait	il rit	il rira	il rirait	q. rie	il rie	il rît
irregular.		n. rions	n. riions	n. rîmes	n. rirons	n. ririons	rions	n. riions	n. rissions
		v. riez	v. riiez	v. rîtes	v. rirez	v.ririez	riez	v. riiez	v. rissiez
		ils rient	ils riaient	ils rirent	ils riront	ils riraient	q. rient	ils rient	ils rissent
Rompre, 4. *to*	rompant	je romps	je rompais	je rompis	je romprai	je romprais		je rompe	je rompisse
break	rompu, *f.* e.	tu romps	tu rompais	tu rompis	tu rompras	tu romprais	romps	tu rompes	tu rompisses
aux. avoir		il rompt	il rompait	il rompit	il rompra	il romprait	q. rompe	il rompe	il rompît
irregular.		n. rompons	n. rompions	n. rompîmes	n. romprons	n. romprions	rompons	n. rompions	n. rompissions
		v. rompez	v. rompiez	v. rompîtes	v. romprez	v. rompriez	rompez	v. rompiez	v. rompissiez
		ils rompent	ils rompaient	ils rompirent	ils rompront	ils rompraient	q. rompent	ils rompent	ils rompissent
Rouvrir, 2. *to*	rouvrant	je rouvre	je rouvrais	je rouvris	je rouvrirai	je rouvrirais		je rouvre	je rouvrisse
re-open	rouvert, *f.* e.	*see* OUVRIR					rouvre		
Saillir, 2. *to*	saillant	il saille	il saillait		il saillera	il saillerait		q saille	q. saillît
project	sailli								
Satisfaire,	satisfaisant	je satisfais	je satisfaisais	je satisfis	je satisferai	je satisferais		je satisfasse	je satisfisse
4. *to satisfy*	satisfait, *f.* e.	*see* FAIRE					satisfais		
Savoir, 3. *to*	sachant	je sais	je savais	je sus	je saurai	je saurais		je sache	je susse
know	su, *f.* e.	tu sais	tu savais	tu sus	tu sauras	tu saurais	sache	tu saches	tu susses
aux. avoir		il sait	il savait	il sut	il saura	il saurait	q. sache	il sache	il sût
irregular.		n. savons	n. savions	n. sûmes	n. saurons	n. saurions	sachons	n. sachions	n. sussions
		v. savez	v. saviez	v. sûtes	v. saurez	v. sauriez	sachez	v. sachiez	v. sussiez
		ils savent	ils savaient	ils surent	ils sauront	ils sauraient	q. sachent	ils sachent	ils sussent
Secourir, 2.	secourant	je secours	je secourais	je secourus	je secourrai	je secourrais		je secoure	je secourusse
to succour	secouru *f.* e.	*see* COURIR					secours		
Séduire, 4. *to*	séduisant	je séduis	je séduisais	je séduisis	je séduirai	je séduirais		je séduise	je séduisisse
seduce	séduit, *f.* e.						séduis		
Semer, 1. *to*	semant	je sème	je semais	je semai	je sèmerai	je sèmerais		je sème	je semasse
sow. pec.	semé, *f.* e.						sème		
Sentir, 2. *to*	sentant	je sens	je sentais	je sentis	je sentirai	je sentirais		je sente	je sentisse
feel	senti, *f.* e.	tu sens	tu sentais	tu sentis	tu sentiras	tu sentirais	sens	tu sentes	tu sentisses
aux. avoir		il sent	il sentais	il sentit	il sentira	il sentirait	q. sente	il sente	il sentît
irregular.		n. sentons	n. sentions	n. sentîmes	n. sentirons	n. sentirions	sentons	n. sentions	n. sentissions
		v. sentez	v. sentiez	v. sentîtes	v. sentirez	v. sentiriez	sentez	v. sentiez	v. sentissiez
		ils sentent	ils sentaient	ils sentirent	ils sentiront	ils sentiraient	q. sentent	ils sentent	ils sentissent
Seoir, 3. *to fit*	seyant	il sied	il seyait		il siéra	il siérait		q. siée	
become	-is								
Servir, 2. *to*	servant	je sers	je servais	je servis	je servirai	je servirais		je serve	je servisse
serve	servi, *f.* e.	tu sers	tu servais	tu servis	tu serviras	tu servirais	sers	tu serves	tu servisses
irregular.		il sert	il servait	il servit	il servira	il servirait	q. serve	il serve	il servît
		n. servons	n. servions	n. servîmes	n. servirons	n. servirions	servons	n. servions	n. servissions
		v. servez	v. serviez	v. servîtes	v. servirez	v. serviriez	servez	v. serviez	v. servissiez
		ils servent	ils servaient	ils servirent	ils serviront	ils serviraient	q. servent	ils servent	ils servissent

List of Irregular Verbs, &c., continued.

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive.	Imperfect.
SORTIR, 2. *to go out*	sortant sorti, *f.* e.	je sors *see* SENTIR	je sortais	je sortis	je sortirai	je sortirais	sors	je sorte	je sortisse
SOUFFRIR, 2. *to suffer*	souffrant souffert, *f.* e.	je souffre *see* OUVRIR	je souffrais	je souffris	je souffrirai	je souffrirais	souffre	je souffre	je souffrisse
SOUMETTRE, 4. *to submit*	soumettant soumis, *f.* e.	je soumets *see* METTRE	je soumettais	je soumis	je soumettrai	je soumettrais	soumets	je soumette	je soum..se
SOURIRE, 4. *to smile*	souriant souri	je souris *see* RIRE	je souriais	je souris	je sourirai	je sourirais	souris	je sourie	je sourisse
SOUSCRIRE, 4 *to subscribe*	souscrivant souscrit	je souscris *see* ÉCRIRE	je souscrivais	je souscrivis	je souscrirai	je souscrirais	souscris	je souscrive	je souscrivisse
SOUSTRAIRE, 4. *to subtract*	soustrayant soustrait, *f.* e.	je soustra's *see* TRAIRE	je soustrayais		je soustrairai	je soustrairais	soustrais	j.. soustraie	
SOUTENIR, 2. *to sustain*	soutenant soutenu, *f.* e.	je soutiens *see* TENIR	je soutenais	je soutins	je soutiendrai	je soutiendrais	soutiens	je soutienne	je soutinsse
SOUVENIR, (se) 2. *to remember*	se souvenant souvenu, *f.* e.	je me souviens *see* TENIR	je me souve- [nais	je me souvins	je me souvien- [drai	je me souvien [drais	souviens-toi	je me souvien- [ne	je me sou- [vinsse
SUBVENIR, 2. *to relieve*	subvenant subvenu, *f.* e.	je subviens *see* TENIR	je subvenais	je subvins	je subviendrai	je subvien- [drais	subviens	je subvienne	je subvinsse
SUFFIRE, 4. *to suffice* aux. avoir irregular.	suffisant suffi	je suffis tu suffis il suffit n. suffisons v. suffisez ils suffisent	je suffisais tu suffisais il suffisait n. suffisions v. suffisiez ils suffisaient	je suffis tu suffis il suffit n. suffîmes v. suffîtes ils suffirent	je suffirai tu suffiras il suffira n. suffirons v. suffirez ils suffiront	je suffirais tu suffirais il suffirait n. suffirions v. suffiriez ils suffiraient	suffis q. suffise suffisons suffisez q. suffisent	je suffise tu suffises il suffise n. suffisions v. suffisiez ils suffisent	je suffisse tu suffisses il suffît n. suffissions v. suffissiez ils suffissent
SUIVRE, 4. *to follow* aux. avoir irregular.	suivant suivi, *f.* e.	je suis tu suis il suit n. suivons v. suivez ils suivent	je suivais tu suivais il suivait n. suivions v. suiviez ils suivaient	je suivis tu suivis il suivit n. suivîmes v. suivites ils suivirent	je suivrai tu suivras il suivra n. suivrons v. suivrez ils suivront	je suivrais tu suivrais il suivrait n. suivrions v. suivriez ils suivraient	suis q. suive suivons suivez q. suivent	je suive tu suives il suive n. suivions v. suiviez ils suivent	je sui..sse tu suivisses il suivît n. suivissions v. suivissiez ils suivissent
SURFAIRE, 4. *to exact*	surfaisant surfait, *f.* e.	je surfais *see* FAIRE	je surfaisais	je surfis	je surferai	je surferais	surfais	je surfasse	je surfisse
SURPRENDRE, 4. *to suprise*	surprenant surpris, *f.* e.	je surprends *see* PRENDRE	je surprenais	je surpris	je surprendrai	je surpren- [drais	surprends	je surprenne	je surprisse

LESSONS IN GREEK.—No. I.

By JOHN R. BEARD, D.D.

INTRODUCTION.

THE *Greek Language* is the language of the *ancient Greeks*. The designation *ancient Greeks* is applied, in a general way, to describe the inhabitants of several small states, such as, the *Lacedæmonians*, the *Achaians*, the *Dorians*, the *Aetolians*, &c., often spoken of under the comprehensive name of *Hellenes*, and dwelling on the sea coast of Asia Minor, and on the isthmus which runs into the Mediterranean from Dalmatia, Moesia, and Thrace, and of which *Macedonia* is the northern, and the *Peloponnesus* (now called *the Morèa*), the southern half. The Greek language and the Latin language form what are termed *the Classical languages*. By the term *classical languages* we designate those languages in which are written the works which, in modern times, learned men have agreed to regard as *classical;* that is, works that stand in the *first* or *highest class* of the productions of the human mind. The Greek language is a branch of the great family of languages which, with the somewhat vague name of *Indo-Germanic*, is now known to have extended from Scandinavia to the Indus, embracing as its two principal components, the *Sanscrit* or ancient language of the Brahmins, on the East; and on the West, the *Teutonic*, including the *German*, the *Dutch*, and the *English*. It is thus seen that the Greek is allied to our own tongue. It is allied to the English in regard to structure. What is more obvious to the *tyro* or the *beginner* is, that the Greek is allied to the English in words: e. g. Our word *one* is the Greek *hen; two* is the Greek *duo*; *three*, is the Greek *treis*. The English pronoun *I* is only an abbreviated form of the Greek *ego*, which signifies *I*. Our verb *know* is the Greek *gno*, the sound being identical, and the variation existing only in the letters. Many instances of identity between the words in English and in Greek will appear in the course of these instructions. At present, it is sufficient to mark the general fact.

With the Latin, the Greek is connected more intimately than with the English. So much in common have the two, both in words and in the inflexion of words, that a knowledge of the one affords great assistance in the study of the other. In general, indeed, a thorough acquaintance with any language conduces to the attainment of others. But here the relationship is so close that the aid is special. That aid may extend its operation to the whole class of languages known as the *Indo-Germanic;* so that those who become familiar with Greek, thereby acquire facilities for studying not only Latin, but also Sanscrit, German and English.

The Greek is a very old language. Homer's writings go back to nearly a thousand years before the birth of Christ, and at the time when they were produced, the Greek language was already in some sense a perfect tongue; and it must have existed and have been spoken by persons of no small culture for centuries. Under the name of *the Romaic*, the Greek language—a good deal modified—is still spoken and written, being the vernacular or native tongue of the modern Greeks; who, though in an impure state, possess the blood of the ancient Greeks, and dwell on the same soil.

The Greek is a very superior language; it is surpassed by no language except the Sanscrit. No modern tongue except the German, can endure a comparison with the Greek. The Greek language owes its superiority to the richness of its vocabulary, the variety of its inflexions, its power of forming compounds, its expressiveness, its adaptability, and its harmony. It was said of old that if the gods were to descend to earth, they would speak the language of Plato, the famous Greek philosopher. The spirit of the saying is borne out by fact. The Greek is a wonderful and beautiful instrument of human thought.

The Greek language is a rich treasure-house. There is no ancient literature at all comparable with the Greek for

copiousness and variety. In modern times, only the German may put in a claim to comparison. To any one who has the slightest tinge of literature, the mere names of Homer, Hesoid, Herodotus, Æschylus, Sophocles, Plato, Socrates, &c., call up the idea of literary wealth the most abundant and the most various.

A knowledge of the Greek language is a key to that most copious and most beautiful literature. Such a key must be worth possessing. Such a key opens the door to wealth immeasurably greater and better than was the wealth of Croesus, than is "the wealth of the two Indies."

But the study of Greek is worthy of attention, if only as a means of self-discipline. Self-discipline is the true end of education. Nothing better can be given to any mortal, than a well cultivated mind. The man whose faculties are in their highest state of development, and their greatest degree of activity and productiveness, stands at the summit of humanity, and now enjoys what he has reached, namely, the perfection of his earthly being.

Pre-eminently fitted is the study of the Greek to educate our mental powers. All linguistical studies are useful for that purpose. Looking at their effects in their several bearings, I am free to declare that the study of languages is of all studies the most useful. But the Greek has the special recommendation of being more subject to rule, than other languages. The Greek too deals with wider reaches of intellect and subtler distinctions of thought than most other tongues can comprise or define.

But there is a recommendation of the study of Greek which throws all others into the shade, for in Greek are the scriptures of the New Testament written. Strange is it that in a Christian country, the records of salvation should be so little read in their originals. What a privilege is the power to do so! How much better are the teachings of the apostle to the gentiles understood, when the student applies his mind to the very words which fell from his lips, or flowed from his pen. How much more easily, and how much more thoroughly do we enter into the spirit, and feel at once the beauty and the power of the lessons of the Divine Master, when we have thrown aside the veil of a translation, and reverently advance into his sacred presence.

These are considerations which ought to reach and influence a very large and a very important class. The ordained ministers of religion are generally supposed to possess the power of reading the New Testament in the original Greek. Many of them do possess that power. Others, perhaps the bulk, do not possess that power. Owing to the impediments which once existed in the way of the study, Greek was, even in the colleges, acquired but imperfectly. What is imperfectly acquired, not being really known, is easily lost. And many of the clergy have hardly retained "the little Latin and less Greek" which they acquired at the grammar school and the University. If, however, they are not likely now to resume their classical studies, a very numerous body of young men may be invited to put themselves under my guidance; I allude to such as though engaged in the Christian ministry have not enjoyed the advantages of a collegiate or learned education; and to others, who, whether as lay readers, local preachers, superintendents and teachers of Sunday schools, require for the proper and satisfactory discharge of their offices, all the knowledge of the Divine Word that they may be able to command. The wants of such, the wants of what may roughly be termed *the uneducated*, will be carefully borne in mind by me, while I prepare these lessons. Little more than some general acquaintance with grammar, and some general knowledge shall I take for granted as possessed by my students. My purpose is to simplify the study of Greek so as to throw open the door to all who are earnest in the great work of self-culture. Nor need any industrious person of ordinary capacity despair of acquiring skill to read the New Testament; and if he pleases, and will persevere, he may go on to an intimate acquaintance with Xenophon, Demosthenes, Thucydides, Homer and other Greek classics.

And here I am reminded of the amazing change which has taken place in facilities for studying the Greek, within my lifetime. When, now some four and thirty years ago, I engaged in an attempt which I successfully made to acquire a knowledge of the Greek, and by that and similar means to work my way to college, I found no aids whatever in my native tongue—neither grammar nor lexicon. At that time the absurd practice of locking the gates of knowledge (and sometimes of throwing the key away) had scarcely begun to pass into disuse. Then manuals for the study of Greek were written in Latin. Thus the student had to acquire one unknown tongue by means of another unknown tongue. Such was my own lot. I knew very little Latin, yet only through the Latin could I get to the Greek. Besides, the manuals that did exist were very high in price. The dictionary which I purchased, that known as Hederick's, cost me two guineas. For that sum, even now, a small classical library may be bought; and when these lessons are completed, and when suitable accompaniments shall have been given to the public, a far less sum will amply supply the student for the Christian ministry with all that he will need for a minute and exact acquaintance with the New Testament originals.

While, however, the Greek language commends itself very specially to the attention of all who seek an acquaintance with Divine truth, and offers its aid for the general culture and improvement of human intelligence, it is not without a claim which, though more humble, may with some persons be more prevailing. That claim it lays before all who study or propose to study the sciences. Though many of the sciences existed not, even in rudiments, during the classical days of Aristotle, and though other sciences have been carried far beyond the boundaries where they were left by Euclid and by Galen, yet in general, the language of science is Greek; for such is the readiness with which the Greek lends itself to combination that the moment a new science is elaborated, nay, the moment a new fact is ascertained or a new elementary substance is discovered, that moment some form or forms of words are produced from Greek elements, which exactly set forth the novelty. Hence these scientific names are so many definitions, and being definitions they describe the objects which they are used to designate, they, I say, describe those objects to such students as are familiar with Greek. Take *photography* as an instance. This word is made up of phōs *light* and graphé a *painting*, and so means *light-painting*, that is a painting made by the *solar rays*. If the student will take the trouble of turning to the *Greek stems* as set forth in my Lessons on the English language published in "the Popular Educator," he will find many illustrations of the fact that in English, Greek is the language of science.

As being the language of science, Greek is of special utility to all men of science; in particular is it of great service to medical men. A vast number of the words with which they have to do in their studies, are of Greek origin. Those words, to persons ignorant of the Greek tongue, are so many unknown terms, the meaning of which has to be learnt as a mere matter of routine; but to the proficient in Greek, *they define themselves*, and so describe the objects which they represent. Take, as an example, the word *Bronchitis*. Now I have never studied medicine, yet from my knowledge of Greek, I know that *Bronchitis* is a disease whose seat is in the βρογχια, *bronchia*, that is, *the extremity of the wind-pipe*.

A high authority* has recently declared that "already Greek is as impossible an attainment as Sanscrit to numbers of educated men." If this statement is correct, the fact is mainly attributable to the long, tedious, and ineffectual manner in which Greek is still taught in most schools and at the Universities of this country. On Greek and Latin studies which end in little permanent advantage, the best educational years are spent. Exceptions there are of course. But in general, the process is bad, and the result unsatisfactory. And unsatisfactory will the result be, so long as the process remains what it is. In Germany, modes of classical education, and classical manuals of instruction have undergone a most beneficial change, so as greatly to simplify the study and to shorten the requisite time, as well as to improve the mental discipline and augment the knowledge hence accruing. But in England an obstinate retention of imperfect and faulty methods, and the continued employment of difficult and wearying grammars, perpetuate at once ignorance and dullness, and cause practical men to turn away from Greek at least in dislike, if not disgust. The remedy for these evils is to be looked for in the prevalence of classical studies among the people. If the people apply their fresh and

* *F. W. Newman*, Professor of Latin, in University College, London. see his translation of *the Odes of Horace*; p. 3.

vigorous minds to the Greek and the Latin, the grammar schools and the Universities will soon receive a very desirable impulse, and a new era of classical distinction may arise in England.

It may possibly not be accounted presumptuous in the writer of this introduction to a knowledge of Greek prose, to entertain a hope that his lessons may in some slight measure conduce to so happy a result. Of these lessons, one of the chief recommendations will be their tendency to simplify and shorten a study on which, in general, so much time and energy are misspent. If he has any skill for the purpose, he owes it to the fact that for nearly a quarter of a century he was engaged in teaching the Greek language on a method and in manuals, for which he is glad to own himself indebted to German scholarship. To the same source he is under obligations in the ensuing course of instructions.

In proceeding to the study of Greek, you are stopped at the very threshold, for the characters of the letters are not the same as those of your native tongue. The diversity, however, is in appearance more than in reality. In fact, the English alphabet was derived from the Latin alphabet, and the Latin alphabet was derived from the Greek alphabet. It may be added, that the Greek letters can be traced back to the Phenician. Thus we learn that the English and the Phenician alphabets are related to each other. In the descent of the letters, however, from age to age, and in their passage from one people to another, they underwent considerable changes; so that, at least in some instances, it is only a practical eye that, by supplying the intermediate forms, can discover the identity. Yet scarcely is the difference in any case much greater than exists between what we call *Old English* or *Black Letter*, and the letters now employed in ordinary printing; or those you see when you compare a written with a printed composition.

I have made these remarks in order not only to state an important fact, but to induce you to compare the forms of the Greek letters with the corresponding English forms. By so doing you will be much aided in becoming familiar with the Greek letters.

THE GREEK ALPHABET.

Characters. Capitals.	*Small Letters.*	*English Equivalents in Sound.*	*Name in English.*	*Name in Greek.*
Α	α	a	Alpha	Αλφα
Β	β	b	Bēta	Βητα
Γ	γ	g	Gamma	Γαμμα
Δ	δ	d	Delta	Δελτα
Ε	ε	e *short*	Epsīlon	Εψῖλον
Ζ	ζ	z	Zēta	Ζητα
Η	η	e *long*	Eta	Ητα
Θ	ϑ	th	Thēta	Θητα
Ι	ι	i	Iota	Ιωτα
Κ	κ	k	Kappa	Καππα
Λ	λ	l	Lambda	Λαμβδα
Μ	μ	m	Mu	Μυ
Ν	ν	n	Nu	Νυ
Ξ	ξ	x	Xi	Ξι
Ο	ο	o *short*	Omīcron	Ομῖκρον
Π	π	p	Pi	Πι
Ρ	ρ	r	Rho	Ρω
Σ	σ ς	s	Sigma	Σίγμα
Τ	τ	t	Tau	Ταυ
Υ	υ	u	Upsīlon	Υψῖλον
Φ	φ	ph	Phi	Φῖ
Χ	χ	ch	Chi (like *ki*)	Χῖ
Ψ	ψ	ps	Psi	Ψῖ
Ω	ω	o *long*	Omĕga	Ομέγα.

Of these five columns the *first* gives the Greek letters in *capitals*; the *second* gives the same letters in *small forms*; the *third* gives the correspondent *English letters*, that is, the forms in English which have sounds similar to the several Greek letters; the *fourth* gives the *Greek name* of the letters; and the *fifth* gives the *same name* in Greek characters. The names, as they appear in the last column, are the designations which you are to assign to the Greek letters; that is, you are to call *α* not *a*, but *alpha*; *β* not *bee*, but *beta*, and so on.

Before you can set another step, you must make yourself thoroughly familiar with these characters, with their names and their values or sounds. In general, you may follow your ordinary English methods of pronunciation; one or two exceptions will be pointed out immediately. Your present business is to acquire a facility of transferring the Greek characters into corresponding English characters, and to read the former in the sounds of the latter. In the requisite application I advise you to employ a slate and pencil. Write the alphabet several times merely in Greek. Then compare together such Greek characters as resemble each other, and carefully mark wherein they differ. Having become familiar with the mere forms, associate with each its own name. Then study the sounds, that is, pronounce each Greek letter in the correspondent English sound. These processes you must go over again and again, until you are perfectly master of the whole, and can, from memory, write down the alphabet, with all its forms and parts, as here given. I advise you to take great pains in this matter, and not to think of passing on until you have thoroughly accomplished this task. Your attention to this recommendation will save you a world of trouble.

In the commencement, you will do well to confine yourself to the *small characters*; having acquired them, you will readily make yourself familiar with the *capitals*.

In the small characters, you will at once discover similarities between the Greek forms and the English forms. The Greek *α* and the English *a* are obviously the same. The two *ε's* (short *e*) are very nearly alike. The two *δ's* differ little. The two *ι's* are identical; so are the two *ο's* (*o* short), and the Greek *o* long (*ω*) is nothing but two short *o's* (*oo*) put together.

You will notice, in the Greek, two forms of the small letter *s*. These two forms are *σ* and *ς*. Of these, the first occurs at the beginning and in the body of a word; the second stands at the end of a word. This form of the sigma, namely *ς*, may also be used in compounds, when the first word ends in *s*: e. g.,

Ordinary Sigma.	*Sigma at the end*	*Sigma in Compounds*
δουλωσω	δρασμος	δυσγενης
σεισμος		προσφερω

This sigma, *σ*, when in this form, *ς*, sometimes becomes *τ*, when it is equivalent to *σ* and *τ*, our *st*.

Gamma (*γ*) has the sound of *n* before *γ*, *κ*, *χ*, *ξ*; thus, Γαγγης is Ganges; συγκοπη is pronounced syncopé; Κεγχριος, Kenchrios; and λαρυγξ, larynx.

Chi, *χ*, has a guttural sound, and so differs from *kappa*, *κ*. *χ* is never pronounced like our *ch* in *church*, but always in a way resembling our *k* in *kite*, *kitchen*, *kick*.

Over vowels, *ε* in *beta*, *epsilon*, &c., this mark ˘ will be observed. The mark is used to denote a long vowel. The force of it, you may give by throwing the accent or stress of the voice on the vowel or syllable over which it is placed. Thus *omīcron* is to be pronounced *omīcron*. The opposite of - is ˘, as in *Omĕga*: ˘ denotes a short or unaccented syllable; accordingly, *omĕga* is pronounced thus *ōmega*, with the accent on the *o*. A vowel of doubtful length is marked thus ˘ as *ă*. When two vowels come together, the former is generally short or unaccented, as Ιλῐον. Dipthongs, however, are long; that is, on them you must throw the accent, as *αὐξᾰνω*. Syllables are short or long, as they contain a short or long vowel. Syllables containing a dipthong are long.

You may ascertain whether you have mastered the letters by practising yourself in the ensuing

Exercise for Pronunciation.

N.B. Every vowel in Greek, whether at the end of a word or not, is pronounced as a separate syllable.

Κα, κε, κη, κι, κο, κυ, κω. γε, γο, γη, γω, γα, γι. χη, χω. τα, τε, το. δε, δη. θη, θι, θεα, θητα. πι, πω, πας. βαλλω, φι, φερω. σα, σον, σιγη. φυγη, φυγω. ματερ, μελος. ψι. γασμα. ζητα, ζητεω, ζητησις; ξανθος νυκτες; χθων.

Αλεξανδρος, Αυλις. Ωλην, Ωκεανος, Ωρωπος. Ψαυμις, Ψαμμετιχος. Βιας. Γη, Γλαυκος, Γοργη. Χαριτες, Χάριλαος. Φωκευς, Φωκῖων, Φρυγες. Ὑδρα, Ὑπάνις, Ὕλλος. Δολοψ. Διονῦσος, Διοσκουροι. Ερις. Ζακυνθος, Ζευξις. Ηλεκτρα, Ηχω, Ηως. Κιμβροι. Λυδια, Λυσιας, Λοκρις, Λακεδαιμων. Νικη. Μινως. Ολυμπος. Πλαταια. Πιττάκος. Σαλαμις. Σακας, Σκυθια. Τιτᾶνες, Ῥοδος, Ῥωμη, Ῥηγιον. Ξανθος.

You will find in the ensuing lessons these three marks of accents, namely ' as in ἱνα, ι as in ᾠδη, and ~ in οῦς. The first is called the *spiritus asper* or *rough breathing*, being equivalent to our aspirated *h*; pronounce, then, as with an *h* syllables before which this aspirate is placed, as Ἀδης, *Hades:* the second mark is called *iota subscript* (*i underwritten*), so termed because the letter *i* instead of appearing at the end, as in λογωι, is written or placed under the ω as in λογῳ. This mark is commonly disregarded in pronunciation: the third is called the circumflex, being made up of the acute accent ' and the grave accent `, from the union of which ^ the circumflex ~ is produced. The circumflex denotes a contraction, as in the dipthong οῦς, *an ear.*

In printed Greek books, you will see several marks over the letters. These I shall, for the most part omit, as the study of them would embarrass the beginner, and as a knowledge of them is not necessary to either the understanding or the pronunciation of Greek. When you have mastered the real and inevitable difficulties of the language, you will readily acquire an acquaintance with these now almost useless signs.

SOLUTIONS OF PROBLEMS AND QUERIES.

Answer to the question proposed by T. Tayler, p. 164, Vol. III.

Before solving the question, I may be allowed to make two remarks. First, The dimensions of the given triangle appear to have been chosen with a view to the most convenient method of solution, the sides being in the proportion of 3, 4, 5, and the triangle being therefore right-angled. Of this, however, I shall take no notice, but treat the triangle as though it were oblique-angled, and thus give a general instead of a particular solution. Secondly, The three sides being given, the *area* is a superfluous datum, not only because it might be found from the dimensions given, but because it is actually not required in the solution; hence the prolix operation of finding the area from the three sides may be altogether avoided.

Let A B C be the given triangle, of which A is the "acutest angle," and C D the perpendicular upon the longest side.

Let x=the first man's payment, in crowns; then $x+9$= the last; and the sum of this arithmetical series will be

$$(x+x+9)\times 5=10x+45=160 \text{ crowns};$$

$$\text{Or } x=\frac{160-45}{10}=11\tfrac{1}{2} \text{ crowns}=23 \text{ half-crowns.}$$

The payments and proportional shares will therefore be as follows:—viz.

	Half-crowns.		*Parts of the triangle.*
A pays . .	23	and has . . .	23
B	25	. . . . .	25
C	27	. . . . .	27
D	29	. . . . .	29
E	31	. . . . .	31
F	33	. . . . .	33
G	35	. . . . .	35
H	37	. . . . .	37
I	39	. . . . .	39
J	41	. . . . .	41
Half-crowns	320	*The whole triangle*	320 parts.

Now $AC^2-CB^2=AD^2-DB^2$ and

$$\frac{AD^2-DB^2}{AB}=AD-DB; \text{ that is}$$

$$\frac{40^2-30^2}{50}=14 \text{ the diff. of the segments of the base.}$$

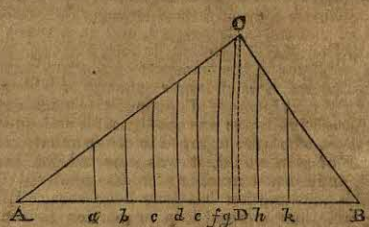
Hence $\frac{50+14}{2}=32$, A D,

$50-32=18$, D B.

Again, since triangles of the same altitude are to each other as their bases, and the triangle A B C contains 320 parts,

50 : 32 :: 320 : 204·8 parts in A D C,

320—204·8=115·2 parts in D B C.



And as similar triangles are to each other as the squares of their homologous sides, we have, in the triangle A D C,

204·8	:	23	:: 32^2	: 115, Aa,^{2}
204·8	:	48	:: 32^2	: 240, Ab,^{2}
204·8	:	75	:: 32^2	: 375, Ac,^{2}
204·8	:	104	:: 32^2	: 520, Ad,^{2}
204·8	:	135	:: 32^2	: 675, Ae,^{2}
204·8	:	168	:: 32^2	: 840, Af,^{2}
204·8	:	203	:: 32^2	: 1015, Ag;^{2}

And in the triangle D B C, we have

115·2	:	80	:: 18^2	: 225, Bh,^{2}
115·2	:	41	:: 18^2	: 115·3125, Bk.

Therefore, extracting the square roots, we have

Aa=10·7238053
Ab=15·4919333
Ac=19·3649168
Ad=22·8035085
Ae=25·9807621
Af=28·9827535
Ag=31·8590646

Bh=15·0000000
Bk=10·7383658;

And taking the difference between each of these and the one next less, in the same triangle, we obtain

Aa=10·7238053, A's share.
ab=4·7681280, B's
bc=3·8729835, C's
cd=3·4385917, D's
de=3·1772536, E's
ef=3·0019914, F's
fg=2·8763111, G's
(gh=3·1409354, H's)*
hk=4·2616342, I's
Bk=10·7383658, J's.

*H's share falls between Ag and B partaking of both triangles; that is, it consists of A D—Ag in one triangle, and D B—Bh in the other, or is equal to

$$AB-(Ag+Bh)=50-46{\cdot}8590646=3\ 1490354.$$

X plus Y.

This question was solved, with a few inaccuracies by G. Archbold, St Peters, a student of the P. E. only 12 years old. It was correctly solved by J. M. Leath, Ottley; T. Pogson, Mossley; W. H. Macellen, Manchester; A. U. Rutherglen; Somnus, Yorkshire; J. Russell, Kingscavil; Abel Sampson, and Charles Bertram, Ellangowan; and others.

LESSONS IN MECHANICS.—No. XXI.

RAILWAYS.

SOME OF THE ADVANTAGES OF OUR IRON ROADS.

Our iron roads now furnish the most common medium of communication; they intersect every civilised country, and, by the aid of steam navigation, bring together the very ends of the earth. Much has been written on railway engineering, and this department of industrial art has made remarkable progress within the last few years.

It has been remarked that the improvements which cheapen transport, necessarily including the expenditure of less labour in effecting it, might seem, at first view, to be attended with injury to the industry employed in the business of transport itself, by throwing out of occupation that portion of labour rendered superfluous by the improvement. But experience shows the result to be the reverse. The diminished cost of transport invariably augments the amount of commerce transacted, and in a much larger ratio than the reduction of cost; so that, in fact, although a less amount of labour is employed in the transport of a given number of commodities than before, a much larger quantity of labour is necessary by reason of the vast increase of commodities transmitted.

The beginning of railways was the signal for violent opposition on the part of those who were engaged in coach and wagon traffic. A large number of men would, it was asserted, be thrown out of employment, an immense number of horses rendered useless. The fallacy of this assumption has long been seen. Human labour and horse traffic has increased in proportion to the increase of railways; so far from interfering with trade, they have actually advanced it—trebled, quadrupled it.

In considering the advantages of railways, we have primarily to notice time. Time is said to be money, and in all business transactions it is so. Money doubles itself in time, if put out to interest, and allowed to accumulate its compound interest; and there is a clear amount of money lost when time is lost in realising the profit on the sale of any article. How much did our graziers suffer in the worth of the cattle sent to market, when the poor beasts had to trudge their weary way from their country pastures to the London shambles! Sheep frequently had their feet literally worn off, and were obliged to be sold on the road for what they would fetch. The quality of the meat was deteriorated, and the price it was worth lessened in proportion. Railways bring the sheep and oxen comfortably to market, in good condition, and worth the money asked. Fish, vegetables—all the items of our London commissariat—are cheapened and bettered, and made more profitable, by railways. This has long been seen, and needs no argument. As to railway travelling, who would exchange a "first class" for the inside of an old stage coach, or even the mail?

LAND SURVEYING AND LEVELLING.

The following practical hints on the construction of railroads may here be appropriately introduced:—

The first and most important step in the construction of railways is a complete and accurate survey of the country through which the line is to extend.

Land surveying and levelling might very well be conducted together; one party mapping, while the other lays down the rise and fall.

To the engineer as well as to the shareholder, the judicious selection of the line is very important. From the line taken, and the prices given to pay out leaseholders, &c., on some of our rails, one would be led to imagine that money was no object, and that the whim of the engineer, or the predilection of a director, was of more importance than the returnable outlay of construction. No subject at the outset is more important than a correct survey of the ground, and an accurate plan of the level. Too much care cannot be exercised in both these particulars; they form the ground plan of the engineering architect, they show him the difficulties he has to overcome or avoid.

CUTTINGS AND EMBANKMENTS.

The cuttings and embankments have next to be considered. In some localities the very nature of the ground renders both these matters unimportant. The line runs over a level plain with fields and meadows on either side. But where the ground is hilly, cuttings and embankments must occur; and it is the object of the engineer to manage both with economy.

When a cutting is made through clay, the slope in some instances is only required to be very slight, in others it must be increased five or six fold, or no security can be given for its retaining its position. Here it is essential that the engineer should acquaint himself thoroughly with the nature of the soil with which he has to deal.

ANSWERS TO CORRESPONDENTS.

P. E. C.—There can be no objection to your studying both Latin and French together. There is no doubt that French would be more useful to you than Latin. How soon you will be able to read and translate French must necessarily depend on your own diligence. We should say six months.

L. B.—The lines occur in an old number of the *Quarterly Review*, and were written in derision of Nash, the architect of Regent-street:—

"Augustus, at Rome, was for building renowned,
And of marble he left what of brick he had found;
But is not our Nash, too, a very great master?—
He finds us all brick, and he leaves us all plaster!"

Geometry.—1. Before you begin the use of spectacles, it would be well to take the advice of some eminent oculist. 2. You are not disqualified for the Civil Service. 3. The Peninsular war was occasioned by the invasion of Spain by the French under the first Napoleon. The British became the allies of the Spaniards in opposition to the French.

D. P. D. (Warrington).—Our French Lessons are prepared especially for the use of self-instructing students, and we believe that many thousands have acquired, by their help, a thorough knowledge of the language, without the assistance of a master. Persevere, and pay strict attention. We should recommend you to try our German Lessons in preference to Italian. The former language will be more useful to you in business pursuits. We take it for granted that you have a good knowledge of book-keeping and English composition.

W. George.—A proper acquaintance with the letters of the shorthand alphabet will readily suggest the neatest and most complete form of uniting them in words. Taking those words which we give as samples, practise the easiest method of putting the letters together. The easiest plan is not that which is the easiest written, but the most easily read.

LITERARY NOTICES.

In Monthly Parts, price Sixpence, Part I. ready March 30,

CASSELL'S ILLUSTRATED BIBLE DICTIONARY.

This Dictionary will be found to differ materially from all other similar works. It is designed to present the ripest results of modern Biblical scholarship and research, in a thoroughly popular and intelligible form, and its value and attractiveness will be much enhanced by a large number of beautiful and authentic Engravings and Maps. The work will contain an explanation of every word in the English Bible of special meaning, and of every obsolete word, with copious references to the passages in the Scriptures on which the Articles are founded. Every word will be accentuated. The list of Contributors will include names the most eminent and distinguished in Biblical Literature, among which may now be mentioned those of—

Ainsworth, W. F., Esq., Author of "Researches in Babylonia, Assyria, &c." &c.
Alford, The Very Rev. Dr., Dean of Canterbury, Author of "The Greek Testament, with a Critically Revised Text," &c. &c.
Boxomi, Joseph, Esq., Soane's Museum, Author of "History of Nineveh."
Christmas, Rev. Professor, F.R.S., &c., Author of "Scenes in the Life of Christ," &c. &c.
Cooke, Rev. W., D.D., Author of "The Deity," "Christian Theology," &c.
Cowper, B. H., Editor of "Codex A in Greek," Author of "A Syriac Grammar," &c.
Dobbin, Rev. Professor, D.D., Trinity College, Dublin.
Drew, Rev. G. S., M.A., Author of "Scripture Studies," &c.
Lewin, T., Esq., Author of "A Sketch of Jerusalem."
Mills, Rev. John, M.A., Author of "History of the Jews."
Osburn, W., Esq., Author of "Ancient Egypt: her Testimony to the Bible," &c.
Roberts, Rev. Alexander, M.A., Author of "Dissertations on the Gospels," &c.
Saville, Rev. B. W., M.A., Author of "Revelation and Science," &c.
Smith, Rev. R. Payne, of the Bodleian Library, Oxford.
Tattam, Ven. Archdeacon, D.D., LL.D., &c., Author of "Egyptian Grammar and Lexicon," "The New Testament in Coptic," &c.
Taylor, Isaac, Esq., Author of "Ancient Christianity," "Physical Theory of Another Life," &c. &c.
Tregelles, S. P., LL.D., &c., &c., Translator of "Gesenius's Hebrew Lexicon;" Author of many works on Biblical Science and Criticism.
Woolrych, Rev. H. F., M.A.
Wratislaw, Rev. A. H., M.A., Head Master of King Edward's School, Bury St. Edmunds.
Wright, Rev. C. H. H., Author of "The Book of Genesis, in Hebrew, with a Critically Revised Text," &c. &c.

A further list of names will shortly be published.

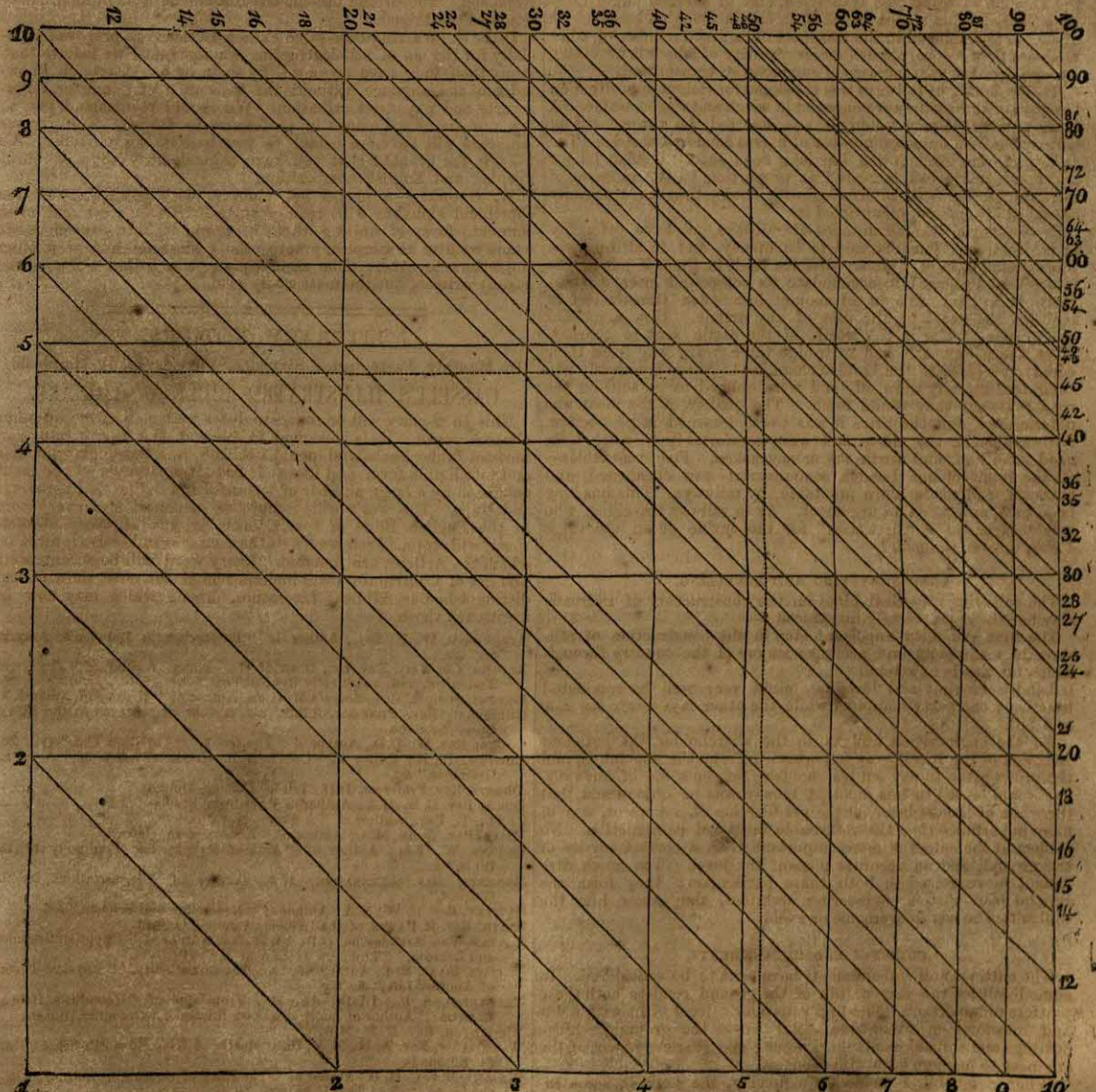
*** Part I. ready March 30th, price 6d. Order of all Booksellers.

CASSELL, PETTER, and GALPIN, Ludgate Hill, London, E.C.

LESSONS IN INSTRUMENTAL ARITHMETIC.—No. I.

NEPERIAN ABACUS.

As many of our readers have asked us to explain various mathematical instruments used in calculation and in practical geometry, we have resolved, under the head of *Instrumental Arithmetic*, to introduce to their notice an account of such instruments from time to time as our space will permit, and to render the subject as attractive by its novelty as it is interesting by its ingenuity. We begin with an account of a *new Multiplication Table*, which we have constructed for them, and which, from its nature, may most properly be denominated the *Neperian* or *Logarithmic Abacus*. Every one knows that *John Neper*, Baron of Merchiston, near Edinburgh, was the first man who published a table of Logarithms; and that this wonderful invention, we mean the *Logarithms* was the principal means, in the hands of the mathematicians of the 17th century, by which such rapid progress was made in the sciences, especially those of astronomy and natural philosophy, to say nothing of mathematics, the calculations in which, before his time, occupied the principal part of a man's life. Baron, commonly called Lord, Neper discovered a *set of numbers*, the indices or representatives of all ordinary numbers, which when *added* or *subtracted* indicated the *products* or the *quotients* of the latter



and thus saved the trouble of *multiplication* or *division*; and which when *multiplied* or *divided*, indicated the *powers* or the *roots* of the same, and thus saved the labour of *raising powers* and *extracting roots*. This, however, will be best understood by examples: Let us take two series, the one *arithmetical* and the other *geometrical*, corresponding to each other, as follows:

1.	Arithmetical series, or *Logarithms*.	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
2.	Geometrical series, or *common numbers*.	1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096.

Here, if you *add* any two numbers or logarithms in the first series as 4 and 7, their *sum* 11, will indicate the *product* of the two numbers which they indicate in the second series; for under 11 you have the number 2,048, which is the *product* of the indicated numbers 16 and 128. Again, if you *subtract* the number or logarithm 6 from the number or logarithm 11 in the first series, their *difference* 5 will indicate the *quotient* of the two numbers which they indicate in the second series; for, under 5, you have the number 32, which is the *quotient* of the indicated numbers 2,048 and 64. Next, if you take any number in the first series as 3, and multiply it by 2, the index of the square, you will have 6 for the product; but 6 in this series stands above 64 in the second; therefore 64 is the square of 8, because 3 stands above 8 in the second series. Lastly, if you take 9 in the first series, and divide it by 3, the denominator of the index of the cube root, you will have 3 for the quotient; but 3 stands above 8 in the second series; therefore 8 is the cube root of 512, because 9 stands above 512 in the same series. This subject is of course capable of much greater extension; but we must pause here to explain our new Multiplication Table.

In this table the logarithms of the numbers placed along the left-hand side from bottom to top are represented by the straight lines or distances along that side from 1 to 10; that is, the distance from 1 to 2 is the logarithm of 2 in the Neperian system, measured numerically from a diagonal scale of equal parts; the distance from 1 to 3 is the logarithm of 3 in the same system, measured from the same scale; and so on. In like manner, the logarithms of the numbers placed along the bottom from left to right, are represented by the straight lines or distances along the bottom from 1 to 10. The products of any two numbers of which the one is taken from those placed along the left-hand side, and the other from those placed along the bottom, will be found thus: look for the corner of the rectangle (which is a square, when the numbers are equal) in which those lines meet which are perpendicularly drawn from the points where the numbers are placed, at the left-hand side and at the bottom of the table; having found this corner, then look along the diagonal which is drawn through it, and either at the one end or at the other, you will find the number which is the product of the two given numbers. For example, suppose that you wished to multiply 3 by 4, if you run your eye along the straight line drawn perpendicularly from the point marked 3 at the left-hand side of the table, till it meets the straight line drawn from the point marked 4 at the bottom, you will find that these straight lines meet in a diagonal, which has the number 12 at each end of it; therefore, 12 is the product of the two numbers 3 and 4. In like manner, if you wish to know the product of the number 5 multiplied by itself, you will find that the perpendiculars drawn from the points marked 5 at the left-hand side and at the bottom, meet in a diagonal which has the number 25 at each end of it; therefore 25 is the product of 5 multiplied by 5, or the square of the number 5. In this way, the products of all numbers from 1 to 10 by each other, can be found by immediate inspection of the table.

Some persons, after reading the preceding remarks, will perhaps say, "*Well*, all this is very ingenious, but what is the use of it? In a common multiplication table from 1 to 10, we have the same results put down in a much simpler form, and in a way which most people can understand very much better!" True: we do not deny the fact; and it is well that such is the case; but in this Geometrical Abacus, we have here exhibited by lines the relations which exist among numbers; thus we speak both to the eye and to the mind. Besides, we have other advantages in this table which the common multiplication table does not possess. This table contains within itself the represented products of all numbers whatever by each other, provided we were enabled to divide and subdivide the distances between the numbers marked on the sides, left and right, top and bottom, to an indefinite extent; this division and subdivision being carried on, according to a proper scale, from the logarithms of the intermediate numbers. To illustrate this remark by an example: suppose we wanted the product of 51 and 47 from the table. Taking rather more than $\frac{1}{10}$ of the distance between 5 and 6 at the bottom, to denote 51, and rather more than $\frac{7}{10}$ of the distance between 4 and 5, at the left-hand side, to denote 47, and drawing straight lines from these points to complete the rectangle in the table, we find that they meet in a point close to the diagonal marked 24; now as tens multiplied by tens produce hundreds, the product of 51 by 47 must be nearly 24 hundreds; the student will of course find the actual product to be 2,397 instead of 2,400. This approximation to the truth is valuable in a thousand practical cases in actual life, and will tend greatly to assist mechanics and others who require to know the product of any two numbers as nearly and as quickly as possible. Let us take another example: suppose we wish to multiply 49 by itself; here 49 is nearly 50, and on looking at the table, we see that 50 multiplied by 50, would plainly give 2,500, as 25 is found on the diagonal line in which the sides of the square of 5 meet; now parallel to this diagonal we have that of 24 very close to it, and mentally guessing the distance of 49 on the left-hand side and at the bottom, between the numbers 4 and 5 as before, we find that the eye would lead us to place the meeting of the sides of the square of 49 in the diagonal marked 24; hence we infer that the product of 49 multiplied by itself is nearly 24 hundreds; the actual product of 49 by 49 being 2,401 instead of 2,400.

This table will also serve the purposes of division, the raising of powers, and the extracting of roots. In performing division, look for the dividend at the extremity of one of the diagonals in the table, and for the divisor at the left-hand side; then from the point where the perpendicular drawn from the divisor meets the diagonal drawn from the dividend, you will find a perpendicular drawn to the bottom, and at its extremity will be found the quotient. For example, suppose you wish to divide 28 by 7; looking for the diagonal marked 28, you will find the perpendicular drawn from 7 at the left hand-side meets it at a point from which there is a perpendicular drawn to the bottom, and this terminates at 4; therefore, 4 is the quotient. To extract the square root of a number: look for the given number at the extremity of a diagonal; then look for the middle point of this diagonal, and the perpendicular drawn from it to the left-hand side or to the bottom will lead to the root required. Thus, to find the square root of 16; look for the number 16 at the extremity of a diagonal, and from its middle point you will see two perpendiculars, one drawn to the left-hand side leading to 4, and another drawn to the bottom leading also to 4; therefore, 4 is the square root of 16. If there be no perpendiculars drawn from the middle point, imagine them to be drawn, or draw them with a pencil, and they will enable you to guess the square root very nearly. Thus, to find the square root of 30; look for the middle point, and suppose perpendiculars to be drawn from it to the left hand side or to the bottom; you will then find that they will meet these in a point exactly between 5 and 6; therefore, the square root of 30 is nearly $5\frac{1}{2}$; but this square root found more exactly by calculation, is 5·477 &c. To take another example; let it be required to find the square root of 2. Here taking the middle point of the diagonal marked 2, you find that the perpendiculars would fall exactly between 1 and 2, thus indicating that the square of 2 is nearly $1\frac{1}{2}$; the calculated root, however, is 1·414 &c.

It may perhaps be inquired by the ingenious student, why in these examples, as well as in the former ones in multiplication where the factors consisted of *units and tens*, we have only approximate answers; whereas, in the case of factors consisting of *units only*, the answers are complete? The reason is this, that the table would require to be subdivided according to a certain law, namely, that the differences between the logarithms of successive numbers are *constant*; but the differences between the numbers themselves are *variable*; and therefore, these differences are not *strictly proportional* to each other. This law will be best understood by examining the following

table of the Neperian or Hyperbolic Logarithms of numbers from 1 to 10 inclusive, with their differences.

Numbers.	*Logarithms.*	*Differences.*
1	0·00000000	
		·69314718
2	0·69314718	
		·40546511
3	1·09861229	
		·28768207
4	1·38629436	
		·22314355
5	1·60943791	
		·18232156
6	1·79175947	
		·15415068
7	1·94591015	
		·13353139
8	2·07944154	
		·11778304
9	2·19722458	
		·10536051
10	2·30258509	

Here we see that although the differences of the *numbers* are successively *unity* or *one*, and therefore *constant*, the differences of the logarithms are *variable*, and go on continually diminishing as the numbers increase.

LESSONS ON CHEMISTRY.—No. I.

In commencing the study of any new branch of learning, it is above all things desirable that the learner should believe himself capable of mastering the subject. On this point there should be no doubting, no fear, no timidity. The student should begin by saying to himself, *What one person has done another may do.* Starting with this train of mind, an individual of average capabilities and energy may learn all that ever has been learned of any science; but whether he add to the riches of that science, and stepping out of beaten tracks he becomes a discoverer, that is quite another question, dependent altogether on the power of his own inventive faculties. No amount of scientific instruction can ever create the inventive faculty. Neither poet nor scientific discoverer can be made by instruction; yet the power to read the poetry already written and to comprehend the science already made known, *this* power it is within the province of instruction to confer.

Success or failure, nevertheless, will depend on whether the learner begins at the right end of a subject or the wrong one; and this remark applies with especial force to chemistry, a science which, though beautiful in all its parts, requires to be approached from certain points in order that these beauties may be seen.

Chemistry is an experimental science, consequently the only way of learning it is by experiment. It is true an individual with a good memory might learn by rote whole pages of a chemical treatise, and might, if his memory were very strong, learn to repeat verbatim whole treatises. He would be very far however from knowing chemistry. The burdensome weight of facts undigested would have weakened the faculty above all others most useful to a chemist, the faculty of observation and reflection.

Consistently with the views just expressed, it will be the object of these lessons to present the reader with a course of chemical instruction strictly practical. Every point will be demonstrated by experiment, nothing being taken for granted without proof; and, in order to avoid needless cost in chemical apparatus, the very simplest adaptations shall be made to serve our purposes. Not serve our purposes *after a fashion* either—not loosely, inconclusively, vaguely—the apparatus chosen shall serve our purpose well, to the extent promised, and whenever it is necessary to treat of processes in the conducting of which simple instruments will not suffice, diagrams of them will be given, so that the reader will have the option of purchasing the instruments and performing the experiments, or he may rest content with their description.

And now one word for the consolation of those readers who look with envy at the fine array of instruments seen in shop-windows of chemical dealers—and lament their inability to get them; one half of these instruments, at the lowest calculation, is useless, and the other half can readily be made by the learner himself. Let it be accepted as a fact that all highly ornamented chemical apparatus is useless. Let the reader of these lessons hold in abhorrence those highly lacquered, red-varnished brasses and bottles, which cut so conspicuous a figure in instrument makers' shops. For the most part they are worse than useless; they are injurious, they are made for display, not for work.

In short I will conclude these preliminary remarks by saying that amongst all the various instruments used by chemists in their ordinary investigations, I only know of two, the air-pump and the beam and scales, which cannot be made by any person of moderate constructive skill.

As these lessons are to be practical, it is now time to conclude preliminaries, and begin our investigations. Where then are we to begin? which is the proper end of our investigation? Let us just take a casual glance at the range of subjects included by our science. The world of which we are living members; air, water, earth, minerals, trees, flowers, animals, all and every part of the world; in short—are made up of about 63 ingredients differently combined; and of these 49 are metals. This may appear very strange to a novice in chemistry. He may wonder that so many thousand forms of existence—some dead, others living; some animals, others vegetables; some solids, others liquids; he may wonder that all these should be made up of no more than 63 different materials. How much more strange then will the statement appear that by far the greater number of those materials (elements or simple bodies as chemists term them) are comparatively scarce in nature, and that at least three-fourths of the crust of the globe and its atmosphere—its beings, dead and living—are composed of one element alone! Yet such is the fact,—as will in proper time and place be demonstrated.

Now it is the object of chemistry to teach, first, the nature of these simple elements or materials; secondly, the nature of the compounds which they form: thus we proceed from the simple to the combined, just as the learner of a new language first masters the alphabet, then combinations of the alphabet in words, afterwards combination of words in sentences, and so forth. It is like this in the study of chemistry, except in one respect. The alphabet of a language has a definite order of succession, in our own alphabet we go from A to Z, in the Greek alphabet we go from Alpha to Omega. Now in the alphabet of chemical elements we are fettered by no such restriction, different teachers of the science may have different notions concerning the proper place to begin; each teacher may adopt a commencement in accordance with the particular scheme of teaching he has decided to adopt. I have adopted mine. The commencement of our succeeding investigations shall be the metals, and of the metals I shall commence with zinc. If the reader should inquire why zinc has been chosen as the beginning of our labour, I reply, he shall be informed by and by. Future experiments shall explain why it has been chosen; meantime let us begin.

A specimen of zinc may be procured at almost any hardware shop, and it may occur in two forms, either as a thin flexible plate, or as a crystalline lump. I will suppose the specimen procured and known to be zinc; I will also assume the second case, namely that the specimen was procured without knowing it to be zinc. How would the student have determined the real nature of the metal? Why intuitively he would have exercised what is vaguely known as common sense, that is to say he would have reasoned without being conscious of the steps of the reasoning process. Now let us just systematically arrange these steps, let us make a system of them and see what the system looks like in the end:—nor let the reader think this reasoning process trivial or unnecessary, chemistry is nothing more or less than a structure built up of such step-like reasonings. The lower steps may be designated common-sense; they are so plain, so obvious, that all who run may read; the upper ones however require the full exercise of mental vigour to understand and master. Suppose then that the metal zinc were placed as a substance unknown before an individual totally

ignorant of chemistry, as he might fancy, for, strictly speaking, no person is totally ignorant of chemistry; how, by what process of reasoning, experiment, or induction, would the conclusion be arrived at, that the metal in question was zinc?

Why it is evident that in all investigations, whether chemical or otherwise, we determine what a thing is, by comparing it with other things, and learning what it is not. We may not possibly be conscious of such being the order of reasoning, but the order exists nevertheless. In the matter of zinc, then, the investigator would have pursued some such sort of reasoning as this: The substance is a white metal, hence it is neither copper nor gold. It is not a soft metal, hence it can neither be lead nor tin. To this extent, common sense or the unconscious reasoning faculty of most persons would readily have gone, but not much farther. Perhaps some investigating mind more acute than its fellows, might have fancied a resemblance between zinc in its brittle form, and steel, and desirous of testing the correctness of his supposition, might have bethought himself of trying upon the unknown metal the effect of an ordinary fire. He would have found that the substance will melt under this trial, whereas steel would not have melted; hence the material in question could not have been steel. The inquirer who should have had recourse to this mode of investigation, would have performed a chemical operation; he would have acted the part of a veritable chemist, fire being one of the chief agents which chemistry employs in distinguishing one material from another, in separating one from another or more, in combining materials so as to imitate the productions of nature, or even advancing, if the expression may be used without presumption, before nature, and bringing compounds into existence which had never hitherto been formed. Now it would scarcely be untrue to say that chemistry presents us with at least a thousand different characteristics, by which zinc might be individualized from every other substance,—might be separated from a thousand or ten thousand others,—might be recognised under any of the numerous forms which it is capable of assuming,—even if it should come before us in a transparent state! The tyro in chemistry perhaps ejaculates with surprise:—How can a metal be rendered transparent? Nothing more easy, nothing more common than this. There does not exist a metal which cannot be dissolved, forming a transparent solution; surely the student will concede, that, under these conditions, the metal is rendered transparent.

But we will now render zinc transparent. It will be necessary to do this as a preliminary to future investigations. Take therefore about one part of oil of vitriol by measure, pour it into an earthenware jug, and pour upon it about six measures of water distilled, by preference; if not readily obtainable, rain water. Remark the great heat developed during this mixture; this circumstance has no reference to anything we are about just now, it relates to something connected with the philosophy of heat, involving a point to be discussed hereafter. Remark the circumstance, however; it is a striking and important phenomenon. Pour now the mixture of oil of vitriol and water into a wine glass, in order that the changes about to ensue may be readily seen. Throw in a portion of the zinc, and a little more, and a little more, until it is no longer dissolved. Possibly, however, notwithstanding all care, a little excess of oil of vitriol may be employed. This matters not, as we shall take means to dissipate the excess hereafter.

The amount of oil of vitriol used need not be more than a tea-spoonful, it must not however be measured by a tea-spoon. Remark now what a commotion ensues, observe the bubbles which arise, notice their smell. They are evidently bubbles of a gas. What is that gas? This will be subject of inquiry hereafter. The subject at present under investigation is zinc, let us therefore pay attention to it solely. The zinc rapidly dissolves,—dissappears, becomes transparent, and thus the general proposition that a metal can be rendered by combination transparent, nay even invisible, is proved.

But a novice in chemistry may fancy the zinc is no longer present. Without knowing exactly where it can have gone, the young chemical beginner may suspect it is not there; that it has vanished by some supernatural agency. Banish at once the term, banish the idea, banish them at once and for ever from your mind and vocabulary. Chemistry recognises no supernatural agencies; chemistry is based upon the conviction justified by the accumulated experience of ages, that nature acts by undeviating laws; these laws it is the aim of science to interpret. If the zinc have vanished from the mixture of oil of vitriol and water it must have vanished under the form of a gas. Had the student proposed to himself for solution the general question, whether any metal could become a gas and escape? the question would have been rational; the supposition involved would moreover have been correct, inasmuch as certain metals can assume the form of gas; nay even flint can assume the form of gas; but so far as our present investigations are concerned the zinc has not vanished, it is in the solution. Although invisible and in the solution, we will hereafter, in the next lesson, find it; meantime at present we will let it rest. During the course of this lesson the student has not been required to use any chemical instrument properly so called, a wine glass and a jug having been the only instruments employed. In the course of the next lesson certain instruments however will be needed, and instructions for making these intruments will be given: meantime let the student provide himself with the following materials:—

1. A roll of brimstone.
2. A thick wire or thin bar of iron.
3. A small rat's-tail file, and three-square file.
4. A quarter of a pound of the kind of glass tube termed *quilled*.
5. A florence oil flask.
6. A few sound corks.
7. Two four ounce phial bottles, and
8. A piece of india-rubber tube, about one fourth of an inch in diameter and eight or ten inches long.

The last article may be readily procured at the tobacconist's shop, being now frequently employed as a flexible tobacco-pipe tube.

With these preliminary directions, I shall now take leave of my pupils for the present. Those who like to be very industrious may accurately fit about three inches of tobacco-pipe shank to one of the corks, as shown in the diagram; may repeat the operation on a second cork; and finally may adapt accurately, air-tightly, one cork to one of the four-ounce phials, the other to the florence flask. I have said *may* do this, had I said may do it if *they* can, the expression would have more correctly represented my opinions. The fact is that the accurate air-tight adjustment of corks, so frequently necessary in chemical experiments, is not so self-evident an affair as many people suppose. The fitting of a cork to a florence flask, or a tobacco-pipe shank to a cork *nearly* air-tight, is no difficult matter, but nearly air-tight will not do for our purpose, the adjustment must be accurate—perfect. If therefore the chemical novice succeeds in accomplishing this wihout the instruction to be conveyed in the next lesson, he is permitted to take some little credit to himself.

LESSONS IN GERMAN.—No. LIX.

§ 58. Possessive Pronouns.

(1) The possessive pronouns are derived, each respectively, from the genitive case of the personal pronouns; thus,

1st pers.	mein, *my*:	from meiner, gen. *sing.* of			Ich,
2d	„ dein, *thy*:	„ deiner,	„	„	„ Du.
3d	„ ſein, *his*:	„ ſeiner,	„	„	„ Er.
3d	„ ihr,* *her*:	„ ihrer,	„	„	„ Sie.
3d	„ ſein, *its*:	„ ſeiner,	„	„	„ Es.
1st	„ unſer, *our*:	„ unſer,	„	*plur.*	„ Ich.
2d	„ euer, *your*:	„ euer,	„	„	„ Du.
3d	„ ihr, *their*:	„ ihrer,	„	„	„ Er, Sie or Es.

* Fomerly, in ceremonious addresses, the words Dero (old gen. plural of der, that person) and Ihro (old gen. plural of er, he) were used instead of Euer (*your*) and Ihr (*her*); as, Ihro Majeſtät, her majesty, &c.

Euer was formerly written ewer, and the syllable Ew. as an abbreviation is used in address to persons of high rank, with the verb in the plural. Ex. Ew. Majeſtät haben befohlen, your majesty has ordered.

Note that in declining unſer and euer, the e before r is often struck out: thus,

unſrer (for unſerer), unſre (for unſere), unſres (for unſeres), &c.
eurer (for euerer), eure (for euere), eures (for eueres), &c.

(2) By their *forms*, therefore, these pronouns indicate the person and number of the nouns which they represent; that is, the person and number of the *possessors*. As, moreover, they may be declined like adjectives, they, also, make known by their *terminations*, the gender, number and case of the nouns with which they stand connected: for, in respect to inflection, a possessive pronoun agrees in gender, number and case, not with the *possessor*, but with the name of the thing *possessed*.

(3) The possessive pronouns, when *conjunctive*, that is, when joined with a noun, are inflected after the old form of declension; except in three places (nom. sing. *masc.* and nom. and acc. *neuter*), in which the terminations are wholly omitted; thus,—

	Singular.		*Plural.*
Masc.	*Fem.*	*Neut.*	*For all Genders.*
N. mein,	meine,	mein;	meine, my.
G. meines,	meiner,	meines;	meiner, of my.
D. meinem,	meiner,	meinem;	meinen, to my.
A. meinen,	meine,	mein;	meine, my.

(4) When, however, these pronouns are *absolute*, that is, when they stand alone, agreeing with a noun understood and demanding a special emphasis, the terminations proper to the three places noted above are of course affixed: thus, dieſer Hut iſt meiner, nicht deiner, this hat is *mine*, not *thine*; dieſes Buch iſt meines, this book is *mine*.

(5) But when a possessive pronoun *absolute* is preceded by the definite article, it then follows the New form of declension: thus,

	Singular.		*Plural.*
Masc.	*Fem.*	*Neut.*	*For all Genders.*
N. der meine,	die meine,	das meine;	die meinen, my.
G. des meinen,	der meinen,	des meinen;	der meinen, of my.
D. dem meinen,	der meinen,	dem meinen;	den meinen, to my.
A. den meinen,	die meine,	das meine;	die meinen, my.

(6) Often, too, in this case, the syllable ig is inserted, but without any change of meaning: thus,

	Singular.		*Plural.*
Masc.	*Fem.*	*Neut*	*For all Genders.*
N. der meinige,	die meinige,	das meinige;	die meinigen, my.
G. des meinigen,	der meinigen,	des meinigen;	der meinigen, of my.
D. dem meinigen,	der meinigen,	dem meinige;	den meinigen, to my.
A. den meinigen,	die meinige,	das meinige;	die meinigen, my.

(7) When, finally, a possessive pronoun is employed as a predicate, and merely denotes possession, without special emphasis, it is not inflected at all; thus, der Garten iſt mein, the garden is mine; die Stube iſt dein, the room is thine; das Haus iſt ſein, the house is his.

(8) It should be added that the Germans, when no obscurity is likely to grow out of it, often omit the possessive pronoun, where in English it would be used: the definite article seeming sufficently to supply is place; as, Ich habe es in den Händen, I have it in *the* hands; that is, I have it in *my* hands; Er nahm es auf die Schultern, he took it upon the (his) shoulders; Er hat den Arm gebrochen, he has broken (the) an arm or his arm.

§ 59. Indefinite Pronouns

(1) Pronouns employed to represent persons and things in a general way, without reference to particular individuals, are called indefinite pronouns. Such are these,

Man, one; a certain one.
Jemand, some one; somebody.
Niemand, no one; nobody.
Jedermann, every one; everybody

The following, which also belong to this list of indefinites, have already been treated of under the head of indefinite numerals: viz.

Etwas, something.	Jeglicher, each; every one.
Nichts, nothing.	Einige, somewhat; some.
Keiner, no one; none.	Etliche, some; many.
Einer, one; some one.	Aller, every one; all.
Jeder, each; every one.	Mancher, many a; many; several.
Jedweder, each; every one.	

Jedermann is declined thus:

N. Jedermann, everybody.
G. Jedermanns, of everybody.
D. Jedermann, to everybody.
A. Jedermann, everybody.

(2) The German man (like the French *on*) is used to indicate persons in the most general manner: thus, man ſagt, *one* says; that is, *they* say, *people* say, *it* is said, &c. It is indeclinable, and is found only in the nominative; when, therefore, any other case would be called for, the corresponding oblique case of ein is employed: thus, er will einen nie hören, he will never listen to one, i. e. to *any one*.

(3) Jemand and Niemand are declined in the following manner

	Singular.	
N.	Jemand, *somebody*.	Niemand, *nobody*.
G.	Jemands or Jemandes, of somebody.	Niemands or Niemandes, of nobody.
D.	Jemand or Jemandem, to somebody.	Niemand or Niemandem, to nobody.
A.	Jemand or Jemanden, somebody.	Niemand or Niemanden, nobody.

(4) Note that the second form of the dative (Jemandem, Niemandem) is seldom employed except when the other form would leave the meaning ambiguous. Thus, es iſt Niemandem nützlich, it is useful to nobody; where, were „Niemand" used, the sense might be, nobody is useful. This remark applies, also, to the accusative: as, ſie liebt Niemanden, she loves nobody: in which instance, were the other form (Niemand) substituted, it might mean, nobody loves her.

§ 60. Reflexive and Reciprocal Pronouns.

(1) When the subject and the object of a verb are indentical, the latter being a personal pronoun, the pronoun is said to be *reflexive*; because the action is thereby represented as reverting upon the actor: thus, er rühmt ſich, he praises *himself*.

(2) When, however, in such case, the design is to represent the individuals consituting a plural subject as acting one upon another, the pronoun is said to be *reciprocal*: thus, ſie beſchimpfen ſich, they disgrace *one another*.

(3) But, as (for example) ſich beſchimpfen ſie may equally mean, they disgrace *themselves*, the reciprocal word einander (one another) is added to or substituted for ſich, wherever there is danger of mistake; as, ſie verſtehen ſich einander, or ſie verſtehen einander, they understand one another.

(4) In the dative and accusative (singular and plural) the German affords a special form for the reflexives; viz. ſich, *himself, herself, itself, themselves*. The personal pronouns, therefore, in all the oblique cases, that is, all cases, except the nominative, are used in a reflexive sense; except in the dative and accusative (*third* person), where, instead of ihm, ihn, ihr &c., the word ſich is employed. Regarded as *reflexives*, the personal pronouns are declined thus:

Singular.	*Plural.*
First Person.	
G. meiner, of myself.	unſer, of ourselves.
D. mir, to myself.	uns, to ourselves.
A. mich, myself.	uns, ourselves.

Singular.	*Plural.*
Second person.	
G. deiner, of thyself.	euer, of yourselves.
D. dir, to thyself.	euch, to yourselves.
A. dich, thyself.	euch, yourselves.
Third person masculine.	
G. seiner, of himself.	ihrer, of themselves.
D. sich, to himself.	sich, to themselves
A. sich, himself.	sich, themselves.
Third person feminine.	
G. ihrer, of herself.	ihrer, of themselves.
D. sich, to herself.	sich, to themselves.
A. sich, herself.	sich, themselves.
Third person neuter.	
G. seiner, of itself.	ihrer, of themselves.
D. sich, to itself.	sich, to themselves.
A. sich, itself.	sich, themselves.

LESSONS IN GERMAN PRONUNCIATION.—No. VI.

Die Pfirsichen.
Dee pfirr'-zich-chen.

Ein Landmann brachte aus der Stadt fünf Pfirsichen
Ine lânt'-mân brâch'-tai ouss dair stât fünf pfirr'-sich-chen
mit, die schönsten, die man sehen konnte. Seine Kin-
mit, dee shö'n'-sten, dee mân zey'-hen kon'-tai. Zi'-nai kin'-
der aber sahen diese Frucht zum ersten mal.
der âh'-ber zâh'-en dee'-zai frööcht tsööm air'-sten mâhl.
Deshalb wunderten und freuten sie sich sehr über die
Dess'-hâlp vöön'-der-ten öönt froi'-ten zee zich zair ü'-ber dee
schönen Aepfel mit den röthlichen Backen und zar-
shö'-nen ep'-fel mit dain rö't'-lich-chen bâck'-en öönt tsâhr-
tem Pflaum. Darauf vertheilte sie der Vater unter
tem pfloum. Dâh'-rouf fer-tile'-tai zee dair fâh'-ter öön'-ter
seine vier Knaben, und eine erhielt die Mutter.
zi'-nai feer knâ'-ben, öönt i'-nai err-heelt' dee mööt'-ter.

Am Abend, als die Kinder in das Schlafkämmer-
âm âh'-bent, âlss dee kin'-der in dâss shlâhf''-kem'-mer-
lein gingen, fragte der Vater: Nun wie haben
line ghin'-ghen, frâhch'-tai dair fâh'-ter: Noon vee hâh'-ben
euch die schönen Aepfel geschmeckt? Herrlich, lieber
oich dee shö'-nen ep'-fel gai-shmeckt'? Herr'-lich, lee'-ber
Vater, sagte der Aelteste. Es ist eine schöne
fâh'-ter, zâhch'-tai dair el'-tai-stai. Ess ist i'-nai shö'-nai
Frucht, so säuerlich und so sanft von Geschmack. Ich
frööcht, zo zoi'-er-lich öönt zo zânft fon gai-shmâck'. Ich
habe mir den Stein sorgsam bewahrt, und will
hâh'-bai meer dain stine zorch'-zâhm bai-vârt', öönt vill
mir daraus einen Baum erziehen.
meer dâh-rouss' i'-nen boum err-tsee'-en.

Brav! sagte der Vater, das heißt haushälte-
Brâhf! zâhch'-tai dair fâh'-ter, dâss ist house''-hel'-tai-
risch auch für die Zukunft gesorgt, wie es dem Land-
rish ouch fü'r dee tsoo'-köönft gai-zorcht', vee ess dem lânt'-
mann geziemt.
mân gai-tseemt'.

Ich habe die Meinige sogleich aufgegessen, rief
ich hâh'-bai dee mi'-nig-ai zo-glich' ouf''-gai-ghess'-sen, reef
der Jüngste, und den Stein fortgeworfen, und die
dair yünk'-stai, öönt dain stine fort''-gai-vor'-fen, öönt dee
Mutter hat mir die Hälfte von der Ihrigen gege-
möött'-ter hâht meer dee helf'-tai fon dair ee'-rig-en gai-gai'-
ben. O! das schmeckte so süß und zerschmilzt einem
ben. Oh! dâss shmeck'-tai zo zü'ss öönt tser-shmiltst' i'-nem
im Munde.
im möön'-dai.

Nun, sagte der Vater, du hast zwar nicht sehr
Noon, zâhch'-tai dair fâh'-ter, doo hâhst tswâhr nicht zair
klug, aber doch natürlich und nach kindlicher
kloo'ch, âh'-ber doch nâ-tü'r'-lich öönt nâch kint'-lich-cher
Weise gehandelt. Für die Klugheit ist auch noch
vi'-zai gai-hân'-delt. Fü'r dee klooch'-hite ist ouch noch
Raum genug im Leben.
roum gai-nooch' im lai'-ben.

Da begann der zweite Sohn: Ich habe den Stein,
Dâh bai-gân' dair tswi'-tai zone: ich hâh'-bai dain stine,
den der kleine Bruder fortwarf, gesammelt und auf-
dain dair kli'-nai broo'-der fort'-vârf, gai-zâm'-melt öönt ouf'-
geklopft. Es war ein Kern darin, der schmeckte so
gai-klopft. Ess vâhr ine kairn dâ-rin', dair shmeck'-tai zo
süß wie eine Nuß: aber meine Pfirsich habe ich
zü'ss vee i'-nai nöss; âh'-ber mi'-nai pfirr'-zich hâh'-bai ich
verkauft, und so viel Geld dafür erhalten, daß ich, wenn
ferr-kouft', öönt zo feel gelt dâ-fü'r' err-hâl'-ten, dâss ich, ven
ich nach der Stadt komme, wohl zwölf dafür kaufen kann.
ich nâch dair stât kom'-mai, vole tswölf dâ-fü'r' kou'-fen kân.

Der Vater schüttelte den Kopf und sagte: Klug
Dair fâh'-ter shüt'-tel-tai dain kopf öönt zâhch'-tai: klöö'ch
ist das wohl, aber kindlich und natürlich ist es nicht.
ist dâss vole, âh'-ber kint'-lich öönt nâ-tür'-lich ist ess nicht.
Bewahre dich der Himmel, daß du kein Kaufmann
Bai-vâh'-rai döch dair him'-mel, dâss doo kine kouf'-mân
werdest.
verr'-dest.

Und du, Edmund? fragte der Vater. Unbe-
öönt doo, et'-möönt? frâhch'-tai dair fâh'-ter. öön''-bai-
fangen und offen antwortete Edmund: Ich habe
fâng'-en öönt of'-fen ânt'-vor-tai-tai et'-möönt: ich hâh'-ba
meine Pfirsich dem Sohn unsers Nachbars, dem
mi'-nai pfirr'-zich dem zone öön'-zerss nâch'-bârss, dem
kranken Georg, der das Fieber hat, gebracht. Er
krân'-ken gai-orch', dair dâss fee'-ber hât, gai-brâcht'. Air
wollte sie nicht nehmen. Da hab ich sie ihm auf das
voll'-tai zee nicht nai'-men. Dâh hâhp ich zee eem ouf-dâss
Bett gelegt und bin hinweggegangen.
bett gai-laicht öönt bin hin-vaich''-gai-gâng'-en.

Nun, sagte der Vater, wer hat denn wohl den
Noon, zâhch'-tai dair fâh'-ter, vair hâht den vole dain
besten Gebrauch von seiner Pfirsich gemacht?
best'-en gai-brouch' fon zi'-ner pfirr'-zich gai-mâcht'?

Da riefen sie alle drei: Das hat Bruder Edmund
Dâh ree'-fen zee âl'-lai dry: dâss hâht broo'-der et'-möönt
gethan! Edmund aber schwieg still, und die Mut-
gai-tâhn'! Et'-möönt âh'-ber shweeg still, öönt dee möött'-
ter umarmte ihn mit einer Thräne im Auge.
ter ööm-ârm'-tai een mit i'-ner trai'-nai im ou'-gai.

Vocabulary.

Pfirsiche, *f.* peach
Stadt, *f.* town city
fünf, five
man, one
Frucht, *f.* fruit
erst, first
deshalb, therefore
Apfel, *m.* apple
röthlich, reddish
Backe, *f.* cheek
zart, tender, delicate
Flaum, *m.* down
vertheilen, to distribute, divide
Theil, *m.* share, part
vier, four
erhalten, to obtain, to receive, to preserve
euch, you to you
schmecken, to taste
herrlich, glorious, -ly
alt, old
ältest, eldest
säuerlich, tart
sauer, sour
sanft, soft, mild
Geschmack, *m.* taste
Stein, *m.* stone
Baum, *m.* tree
sam, *Affix.* some, full
sorgsam, carefully
erziehen, to bring up, to educate
bravo, bravo, good
das heißt gesorgt für ..., that may be called, to take care of ...
heißen, to be called, command
halten, to hold, to keep
haushälterisch, economically
Zukunft, *f.* future
geziemen, to behoove
Meinige, der, die, das, mine
sogleich, immediately
jung, young
werfen, to throw
fort, away
ihrige, der, die, das, hers, theirs, yours
Hälfte, *f.* half
süß, sweet
schmelzen, to melt
zer, *Prefix.* to pieces, *indicating separation*
zwar, it is true, indeed
klug, shrewd, clever
heit, *Affix. corresponds with* ness, head, hood
Weise, *f.* manner
Raum, *m.* room
Sohn, *m.* son
aufklopfen, to open
auf *adverb & Prefect.* open, up, upon, on
Kern, *m.* kernel
Nuß, *f.* nut
verkaufen, to sell
Geld, *n.* money
nach, to, after
schütteln, to shake
Kopf, *m.* head
wenigstens, at least
wenig, little (*quantity*)
Natur, *f.* nature
Himmel, *m.* heaven
Kaufman, *m.* merchant
Mann, *m.* man (vir)
befangen, embarrassed
offen, open, -ly
Nachbar, *m.* neighbour
Fieber, fever
legen, to put, place
hinweg, weg, away
Gebrauch, *m.* use, custor
drei, three
Bruder, *m.* brother
schweigen, to be silent
umarmen, to embrace
Arm, *m.* arm.

LESSONS IN BOOKKEEPING.—No. IV.

INTRODUCTION.

In the old Italian system of Bookkeeping there was a book generally kept, called a *Waste-Book*, and in this book was entered a memorandum or record of every transaction which occurred in business, let its nature be what it might, whether buying or selling goods, paying or receiving money, drawing or accepting bills, &c. From this *Waste-Book* all the entries were taken and arranged in proper Dr. and Cr. form in the *Day-Book* or *Journal*, which then was the very book which its name denotes; and from this book, they were again taken and posted in the *Ledger*. As the *Waste-Book* contained the first entries of business transactions, in an irregular form, and without any other order than that of actual occurrence, it was considered useless after these entries were transferred to the *Journal*; it might, therefore, be looked upon as *Waste Paper*; whence its name. But no man is infallible in Bookkeeping, any more than in the other affairs of human life; and in case of mistakes or disputes, frequent reference to the original record of the transactions would be required; then indeed, the *Waste-Book* would be of very considerable value. Great and important was the change in Bookkeeping, when the happy thought struck the first man who invented the *Subsidiary Books*, that it would be better to classify and arrange the transactions at once in their proper books, than to huddle them altogether in a *Waste-Book*. This idea, however, did not come into the mind of any individual in the form of an entire system. Like all other inventions, it came slowly and by degrees. The first thought, no doubt was, that it would be well to keep a separate book for all *money* transactions, and to call it the *Cash-Book*; and this Book was long kept in business, apart from the *Waste-Book*, before any other important change took place. Next came the idea that *Bills* which passed through several hands, and were a species of property different from *Cash*, ought to be entered, with all the necessary particulars belonging to them, in a separate book called the *Bill-Book*.

The *Cash* and *Bill* transactions being thus separated from all the other transactions, there remained all those which related to the purchase and sale of *Goods*, gains and losses in trade, &c.; and these were naturally entered still in the *Waste-Book*; but this book had now changed its character, and had become highly important as a daily record of those transactions on which all the others depended; for were there no purchases and sales of *goods*, it is plain that there would be no transactions in *Cash* and *Bills*. In consequence of this change the *Waste-Book* was now called the *Day-Book* or *Journal*, and looked upon as the principal book in keeping Merchants' Accounts. When a Merchant's business became extensive and complicated, it was necessary to have even other books besides the *Day-Book*, for the purpose of keeping a clear and satisfactory account of his property, of the manner in which it changed hands, and of the quantity and value of that which he had on hand as well as of that which he had parted with. Hence arose the propriety, as well as the necessity of keeping, in some houses, a *Stock* or *Warehouse-Book*, an *Invoice-Book*, a *Sales-Book*, an *Account-Current Book*, and even a *Petty-Expense* or *Petty-Cash Book*.

Such is an enumeration of the Books generally kept in a Merchant's Counting-house. But it is plain that the books of tradesmen or general dealers will differ from these more or less, according to the nature of the different trades or branches of business in which they are respectively engaged. To enumerate these, and to explain their nature, would be a task as needless as it would be endless; for, if the student is made once to understand the general principles of Bookkeeping, he will be able with ease to apply these principles to all the possible forms and varieties in which business transactions may occur. For this purpose, therefore, one set of such transactions is as good as another, provided the best system of keeping the books be laid down and explained; and after explaining the nature and form of the most important books, this shall be our duty.

In the *Cash-Book*, then, as its name denotes, the Bookkeeper places the *Daily* entries of all the receipts and payments of *Cash*, on any account whatever connected with the business of the party whose books he keeps; these receipts and payments are entered in the exact and successive order of the dates when they take place, and in general only *one line* of explanation relating to the transaction is allowed in the page of the Book. Every two opposite pages are ruled alike, with *Date* columns and Single or Double *Money* columns, according to the plan on which the Book is to be kept. The *left-hand page* is always marked *Dr.*, and is called the *Dr. side* of the *Cash-Book*; the *right-hand page* is always marked *Cr.*, and is called the *Cr. side* of the *Cash-Book*. The title *Cash Account* is placed at the top of the opposite pages, *Cash* being on the Dr. side, and *Account* on the Cr. side. This shows that the two sides form but one account, and plainly states what that account is. All the *receipts of Cash* (that is, *all the money received*) are entered on the *Dr. side* of the *Cash Book*, with the word To before the name of the *Creditor*, intimating that *Cash*, the thing received, is made *Debtor to* the person from whom it is received, that person, of course, becoming the *Creditor*. All the *payments of Cash* (that is, *all the money paid away*) are entered on the *Cr. side* of the *Cash-Book*, with the word By before the name of the *Debtor*, showing that Cash, the thing parted with, is made *Creditor by* the person who receives it, that person, of course, becoming the *Debtor*.

When Bills are *cashed*, that is, when money is *received* for Bills *drawn*, or *paid* for Bills *accepted*, the entries of these *receipts* and *payments* must be entered in the *Cash-Book*, like any others; and the Bills should also be carefully marked off in the *Bill-Book* as *received* or *paid*. When Bills are *discounted*, that is, when money is *received* or *paid* for them before the time when they fall due, the full sum of the Bill is entered in the *Cash-Book* as *received* or *paid*, and the *Discount* is then entered to the *Debit* or *Credit* of *Interest Account* in the *Cash-Book*, according

as it is received or paid. In the system of Bookkeeping which we are about to lay before our students, the *Balance of Cash in hand* at the end of each month, is entered on the *Cr. side* of the *Cash-Book*, and the *Cash Account* is then closed for the *past* month; it is again opened for the *next* month, by entering the same *Balance of Cash in hand* on the *Dr. side* of the *Cash-Book*. When *one side* of a *folio* (that is, *two opposite pages*) in the *Cash-Book* is filled up before the *other side*, the amounts of both sides are then added up, placed under the sums in the columns, and transferred to the *next folio* in the *Cash-Book*; the succeeding transactions in cash are then entered in the *new folio*, as if the *preceding folio* were completely filled up. In this way the *receipts* and *payments* in the *same month* are kept in the same folio; otherwise, irregularities would arise which would be extremely perplexing to the Bookkeeper.

The *Bill Book* generally consists of two distinct parts; the one contains the *Bills Receivable*, that is, the Bills which have been given to a merchant instead of cash, and of which he is to receive payment at certain periods; and the other contains the *Bills Payable*, that is, the Bills which he has given to others instead of cash, and which he must pay at certain periods. Instead of entering these in separate parts of the same Book, they may be entered in separate Books; the one being called the *Bills Receivable Book*, and the other the *Bills Payable Book*. When a Merchant receives Bills in lieu of money from persons who are indebted to him, it may be done in two ways; first he may either *draw* a bill on the person who owes him the amount of it; or, he may have a bill indorsed over to him, either from the person who drew it for the same amount on another, or from the person through whose hands it passed in a similar manner. When a Merchant *accepts* Bills, that is, *agrees to pay* them, they may be either *drawn upon him* by persons to whom he is indebted, or by persons who have consigned goods to him for sale on their account; or they may be drawn upon him by persons who consider him as the agent of a principal (another merchant) with whom he keeps an Account Current.

The *Bills Receivable Book* contains the particulars of Bills Receivable (that is, for which cash is to be received), which become a merchant's property in the manner which we have described in the preceding paragraph. These particulars are recorded in columns ruled and titled for the purpose; and, in the system which we intend laying before our students, they are entered in the following order:—1st. The *date when received*; 2nd. the *person from whom*, or *on whose account received*; 3rd. the *number* affixed by the Merchant on the bill; 4th. the *person on whom the Bill is drawn*; 5th. the *date when the Bill is due*; 6th. the *amount or sum for which* it is drawn; 7th. the *manner in which* it is *disposed of*; and 8th. the *date when it is disposed of*. Besides these particulars, the following are frequently added in business: 9th. the *name of the drawer* of the Bill; 10th. the *date when* and the *place where* it is drawn; 11th. the *period or time for which* it is drawn; and 12th. the *persons to whom*, and *the place where it is made payable*. When Bills Receivable are drawn upon others and endorsed over to a Merchant, they are called *Remittances*; when they are drawn by the Merchant himself, they are called *Drafts*.

The *Bills Payable Book* contains the particulars of Bills Payable (that is, for cash which is to be paid), which a Merchant *has accepted*, and which are therefore called his *Acceptances*. These particulars are also recorded in columns ruled and titled for the purpose; these are, in this system, entered in the following order:—1st. The date *when* the Bill is *accepted*; 2nd. the *person by whom* and *on whose account* it is drawn; 3rd. the *number* which the Merchant affixes to the Bill; 4th. the *person to whom* it is made *payable*; 5th. the date *when* it falls *due*; 6th. the *amount* or sum for which the bill is *drawn*; and 7th. the date *when it is paid*. Other particulars besides this are entered in the Bills Payable Book, similar to those which we have enumerated under the head of Bills Receivable; but as many of them seem to be unnecessary, except in very particular cases, we have not burdened our system with these, being satisfied that the general principles of Bookkeeping are most readily acquired, when the attention of the student is not attracted by too many things at once. When those particulars only are entered in both Bill Books, which are deemed to be indispensably necessary, it is usual to have a column in each of them headed with the word *Remarks*, and intended for the insertion of any additional particulars relating to a Bill which may seem to be very requisite to be known; such as the amount of foreign money for which foreign bills are drawn, with the rate of exchange between the moneys of the different countries where the bills were drawn, &c. Such a column prevents the necessity of entering these particulars separately as *memoranda* in the *Day-Book*. The following are the forms or specimens of certain bills of exchange, both inland and foreign.

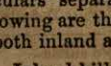
Inland bills of exchange are written orders for the payment of money, drawn by a merchant residing in one place of a country, on a merchant or banker residing in the same place, or in another place of the same country, in favour of a third person, for value received in some shape or the other. These bills are either in the form of a *Draft* or a *Promissory Note*.

FORM OF A DRAFT.

No. 1. (due April 21st.)

London, 18th January, 1863.

£264 : 11 : 0

 *

Three months after date, pay to our order, Two hundred and sixty-four pounds, eleven shillings, for value received.

SMITH & THOMSON.

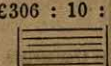
To Mr. JOHN SIMPSON, Cheapside, London. } JOHN SIMPSON.

FORM OF A PROMISSORY NOTE.

No. 5. (due July 17th.)

London, 14th April, 1863.

£306 : 10 : 6

 *

Three months after date, we promise to pay to Mr. Abel Smith, or order, Three hundred and six pounds, ten shillings, and sixpence, for value received.

HOWARD, SON, & Co.

Foreign bills of exchange are written orders for the payment of money drawn by a merchant residing in a particular place of one country, on a merchant or banker residing in a particular place of another country, in favour of a third person for value received, as before mentioned. These bills are, of course, of two kinds, when the moneys of the two countries are different.

FIRST FORM OF A FOREIGN BILL OF EXCHANGE.

London, 21st. May, 1863.

£600, at 13m. 12s. bco. per £. stg.

Three months after date, pay this our first of exchange (second and third of same tenor and date unpaid), to the order of Messrs. Brown and Co., Six hundred pounds sterling, at the exchange of thirteen marks twelve shillings banco per pound sterling, value of the same, which place to account as advised.

J. & R. MORLEY.

Messrs. Litchenstein and Co. Hamburg. }

SECOND FORM OF A FOREIGN BILL OF EXCHANGE.

London, 5th. Feby, 1853. Bco. 3000m. 12sh.

Three months after date, pay this first of exchange (second and third unpaid) to the order of Mr. Thomas Brown, Three thousand marks, and twelve shillings banco, value in account M. N., which place to account as advised.

SCHOFFERN & Co.

Messrs. Hausen and Co., Hamburg. }

* This mark is intended to denote the place of the stamp. It is omitted in the foreign bills.

LESSONS IN FRENCH.—No. LXIX.

By Professor Louis Fasquelle, LL.D.

LIST OF IRREGULAR VERBS, &c. (*continued from page* 252).

Infinitive.	Participles.	Indicative.	Imperfect.	Past Definite.	Future.	Conditional.	Imperative.	Subjunctive	Imperfect.
Surseoir, 3. *to supersede* aux. avoir irregular.	sursoyant sursis, *f.* e.	je sursois tu sursois il sursoit n. sursoyons v. sursoyez ils sursoient	je sursoyais tu sursoyais il sursoyait n. sursoyions v. sursoyiez ils sursoyaient	je sursis tu sursis il sursit n. sursîmes v. sursîtes ils sursirent	je surseoirai tu surseoiras il surseoira n. surseoirons v. surseoirez ils surseoiront	je surseoirais tu surseoirais il surseoirait n. surseoirions v. surseoiriez i. surseoiraient	sursois q. sursoie sursoyons sursoyez q. sursoient	je sursoie tu sursoies il sursoie n. sursoyions v. sursoyiez ils sursoient	je sursisse tu sursisses il sursît n. sursissions v. sursissiez ils sursissent
Survenir, 2. *to happen, etc.*	survenant survenu, *f.* e.	je surviens *see* TENIR	je survenais	je survins	je surviendrai	je surviendrais	surviens	je survienne	je survinsse
Survivre, 4. *to survive*	survivant survécu	je survis *see* VIVRE	je survivais	je survécus	je survivrai	je survivrais	survis	je survive	je survécusse
Taire, (se) 4. *to be silent*	se taisant tu, *f.* e.	je me tais *see* PLAIRE	je me taisais	je me tus	je me tairai	je me tairais	tais-toi	je me taise	je me tusse
Teindre, 4. *to dye*	teignant teint, *f.* e.	je teins *see* CEINDRE	je teignais	je teignis	je teindrai	je teindrais	teins	je teigne	je teignisse
Tenir, 2. *to hold* aux. avoir irregular.	tenant tenu, *f.* e.	je tiens tu tiens il tient n tenons v. tenez ils tiennent	je tenais tu tenais il tenait n. tenions y. teniez ils tenaient	je tins tu tins il tint n. tînmes v. tîntes ils tinrent	je tiendrai tu tiendras il tiendra n. tiendrons v. tiendrez ils tiendront	je tiendrais tu tiendrais il tiendrait n. tiendrions v. tiendriez ils tiendraient	tiens q. tienne tenons tenez q. tiennent	je tienne tu tiennes il tienne n. tenions v. teniez ils tiennent	je tinsse tu tinsses il tînt n. tinssions v. tinssiez ils tinssent
Tonner, 1. *to thunder.* unip.	tonnant tonné	il tonne	il tonnait	il tonna	il tonnera	il tonnerait	q. tonne	q. tonne	q. tonnât
Traduire, 4. *to translate*	traduisant traduit, *f.* e.	je traduis *see* CONDUIRE	je traduisais	je traduisis	je traduirai	je traduirais	traduis	je traduise	je traduisisse
Traire, 4. *to milk* aux. avoir defective	trayant trait	je trais tu trais il trait n. trayons v. trayez ils traient	je trayais tu trayais il trayait n. trayions v. trayiez ils trayaient		je trairai tu trairas il traira n. trairons v. trairez ils trairont	je trairais tu trairais il trairait n. trairions v. trairiez ils trairaient	trais q. traie trayons trayez q. traient	je traie tu traies il traie n. trayions v. trayiez ils traient	
Transcrire, 4. *to transcribe*	transcrivant transcrit	je transcris *see* ÉCRIRE	je transcrivais	je transcrivis	je transcrirai	je transcrirais	transcris	je transcrive	je transcri-[visse
Transmettre 4. *to transmit*	transmettant transmis, *f.* e.	je transmets *see* METTRE	je transmettais	je transmis	je transmet-[trai	je transmet-[trais	transmets	je transmette	je transmisse
Tressaillir. 2. *to start*	tressaillant tressailli	je tressaille *see* ASSAILLIR	je tressaillais	je tressaillis	je tressaillirai	je tressaillirais	tressaille	je tressaille	je tressaillisse
Vaincre, 4. *to vanquish* aux. avoir irregular.	vainquant vaincu, *f.* e.	je vaincs tu vaincs il vainc n. vainquons v. vainquez ils vainquent	je vainquais tu vainquais il vainquait n. vainquions v. vainquiez ils vainquaient	je vainquis tu vainquis il vainquit n. vainquîmes v. vainquîtes ils vainquirent	je vaincrai tu vaincras il vaincra n. vaincrons v. vaincrez ils vaincront	je vaincrais tu vaincrais il vaincrait n. vaincrions v. vaincriez ils vaincraient	vaincs q. vainque vainquons vainquez q. vainquent	je vainque tu vainques il vainque n. vainquions v. vainquiez ils vainquent	je vainquisse tu vainquisses il vainquît n. vainquissions v. vainquissiez i. vainquissent
Valoir, 3. *to be worth* aux. avoir irregular.	valant valu	je vaux tu vaux il vaut n. valons v. valez ils valent	je valais tu valais il valait n. valions y. valiez ils valaient	je valus tu valus il valut n. valûmes v. valûtes ils valurent	je vaudrai tu vaudras il vaudra n. vaudrons v. vaudrez ils vaudront	je vaudrais tu vaudrais il vaudrait n. vaudrions v. vaudriez ils vaudraient	vaux q vaille valons valez q. vaillent	je vaille tu vailles il vaille n. valions v. valiez ils vaillent	je valusse tu valusses il valût n. valussions v. valussiez ils valussent
Venir, 2. *to come* aux être	venant venu, *f.* e.	je viens *see* TENIR	je venais	je vins	je viendrai	je viendrais	viens	je vienne	je vinsse
Vêtir, 2. *to clothe* aux. avoir irregular.	vêtant vêtu, *f.* e.	je vêts tu vêts il vêt n vêtons v. vêtez ils vêtent	je vêtais tu vêtais il vêtait n. vêtions v. vêtiez ils vêtaient	je vêtis tu vêtis il vêtit je vêtîmes n. vêtîtes ils vêtirent	je vêtirai tu vêtiras il vêtira n. vêtirons v. vêtirez ils vêtiront	je vêtirais tu vêtirais il vêtirait n. vêtirions v. vêtiriez ils vêtiraient	vêts q. vête vêtons vêtez q. vêtent	je vête tu vêtes il vête n. vêtions v. vêtiez ils vêtent	je vêtisse tu vêtisses il vêtît n. vêtissions v. vêtissiez ils vêtissent
Vêtir, (se) 2. *to clothe one's self* ref.	se vêtant vêtu, *f.* e.	je me vêts &c.	je me vêtais &c.	je me vêtis &c.	je me vêtirai &c.	je me vêtirais &c.	vêts-toi	je me vête &c.	je me vêtisse &c.
Vivre, 4. *to live* aux. avoir irregular.	vivant vécu	je vis tu vis il vit n. vivons v. vivez ils vivent	je vivais tu vivais il vivait n. vivions v. viviez ils vivaient	je vécus tu vécus il vécut n. vécûmes v. vécûtes ils vécurent	je vivrai tu vivras il vivra n. vivrons v. vivrez ils vivront	je vivrais tu vivrais il vivrait n. vivrions v. vivriez ils vivraient	vis q. vive vivons vivez q. vivent	je vive tu vives il vive n. vivions v. viviez ils vivent	je vécusse tu vécusses il vécût n. vécussions v. vécussiez ils vécussent
Voir, 3. *to see* aux. avoir irregular	voyant vu, *f.* e.	je vois tu vois il voit n. voyons v. voyez ils voient	je voyais tu voyais il voyait n. voyions v. voyiez ils voyaient	je vis tu vis il vit n. vîmes v. vîtes ils virent	je verrai tu verras il verra n. verrons v verrez ils verront	je verrais tu verrais il verrait n. verrions v. verriez ils verraient	vois q. voie voyons voyez q. voient	je voie tu voies il voie n. voyions v. voyiez ils voient	je visse tu visses il vît n. vissions v. vissiez ils vissent
Vouloir, 3. *to be willing* aux. avoir irregular.	voulant voulu	je veux tu veux il veut n. voulons v. voulez ils veulent	je voulais tu voulais il voulait n. voulions v. vouliez ils voulaient	je voulus tu voulus il voulut n. voulûmes v. voulûtes ils voulurent	je voudrai tu voudras il voudra n. voudrons v. voudrez ils voudront	je voudrais tu voudrais il voudrait n. voudrions v. voudriez ils voudraient	veuillez	je veuille tu veuilles il veuille n. voulions v. vouliez ils veuillent	je voulusse tu voulusses il voulût n. voulussions v. voulussiez ils voulussent

FABLES.

LES PARVENUS.

Ni les troubles, Zénobie, qui agitent votre empire, ni la guerre que vous soutenez virilement contre une nation puissante, depuis la mort du roi votre époux, ne diminuent rien de votre magnificence: vous avez préféré [§ 134, (5.)] à toute autre contrée les rives de l'Euphrate pour y élever un superbe édifice; l'air y est sain et tempéré, la situation en [§ 39, (17.)] est riante, un bois sacré l'ombrage du côté du couchant; les dieux de Syrie qui habitent quelquefois la terre, n'y auraient pu choisir une plus belle demeure: la campagne autour, est couverte [§ 134, (2.)] d'hommes qui taillent et qui coupent, qui vont (*aller*, 1. *ir.*) et qui viennent (*venir*, 2, *ir.*) qui roulent ou qui charrient le bois du Liban, l'airain et le porphyre; les grues et les machines gémissent dans l'air, et font espérer à ceux qui voyagent vers l'Arabie, de revoir à leur retour en leurs foyers ce palais achevé, et dans cette splendeur où vous désirez le porter, avant de l'habiter, vous et les princes vos enfants. N'y [§ 39, (18.)] épargnez rien, grande reine; employez y l'or et tout l'art des plus excellents ouvriers; que les Phidias et les Zeuxis de votre siècle déploient [§ 49, (2.)] toute leur science sur vos plafonds et sur vos lambris: tracez y de vastes et délicieux jardins, dont l'enchantement soit tel, qu'ils ne paraissent pas faits de la main des hommes. Epuisez vos trésors et votre industrie sur cet ouvrage incomparable; et, après que vous y aurez [S. 60. 5.] mis, Zénoble, le dernière main, quelqu'un de ces pâtres qui habitent les sables voisins de Palmyre, devenu riche par les péages de vos rivières, achètera [§ 49, (5.)] un tour à deniers comptants cette royale maison, pour l'embellir et la pendre plus digne de lui et de sa fortune.—*La Bruyère.*

L'ACADÉMIE SILENCIEUSE OU LES EMBLÈMES.

Il y avait [§ 61, 2.] à Amadan une célèbre académie, dont le premier statut était conçu (*concevoir*, 3.) en ces termes: *Les académiciens penseront beaucoup, écriront peu, et ne* [S. 17. 2.] *parleront que le moins possible.* On [§ 41, (4.)] l'appelait *l'Académie silencieuse*, et il n'était point en Perse de vrai savant qui n'eût l'ambition d'y être admis Le docteur Zeb, auteur d'un petit livre excellent, intitulé le *Bâillon*, apprit (*apprendre*, 4. *ir.*), au fond de sa province, qu'il (*unip.*) vaquait une place dans l'Académie silencieuse. Il part aussitôt; il arrive à Amadan, et, se présentant à la porte de la salle où les académiciens sont assemblés, il prie l'huissier de remettre au président ce billet: Le docteur Zeb demande humblement le place vacante. L'huissier s'acquitta sur-le-champ de la commission; mais le docteur et son billet arrivaient [§ 119.] trop tard, la place était déjà remplie.

L'académie fut désolée de ce contre-temps; elle avait reçu un peu malgré elle un bel [S. 11. 6.] esprit, dont [S. 30. 8.] l'éloquence vive et légère faisait l'admiration de la cour, et elle se voyait (*voir*, 3. *ir.*) réduite à refuser le docteur Zeb, le fléau des bavards, une tête si bien faite, si bien meublée! Le président chargé d'annoncer au docteur cette nouvelle désagréable [§ 85.] ne pouvait presque s'y résoudre, et ne savait comment s'y prendre. Après avoir un peu rêvé, il fit [S. 31. 3, 4.] remplir d'eau une grande coupe, mais si bien remplir, qu'une goutte de plus eût fait déborder la liqueur; puis il fit signe qu'on introduisit le candidat. Il parut (*paraître*, 4. *ir.*) avec cet air simple et modeste qui annonce presque toujours le vrai mérite. Le président se leva, et, sans proférer une seule parole, il lui montra d'un air affligé la coupe emblématique, cette coupe si exactement pleine. Le docteur comprit (*comprendre*, 4. *ir.*) de reste, qu'il n'y avait [§ 61, 2.] plus de place à l'académie; mais, sans perdre courage, il songeait à faire comprendre qu'un académicien surnuméraire n'y dérangerait rien. Il voit à ses pieds une feuille de rose [§ 76, (11.)] il la ramasse, il la pose délicatement sur la surface de l'eau, et fait si bien, qu'il n'en échappe pas une seule goutte.

A cette réponse ingénieuse, tout le monde battit des mains, on laissa dormir les règles pour ce jour-là, et le docteur Zeb fut reçu par acclamation. On lui présenta sur-le-champ, le registre où les récipiendaires devaient (*devoir*, 3.) s'inscrire eux-mêmes. Il s'y inscrivit donc, et il (*unip.*) ne lui restait plus qu'à prononcer selon l'usage une phrase de remercîment. Mais, en académicien vraiment silencieux, le docteur Zeb remercia sans dire mot. Il écrivit (*écrire*, 4. *ir.*) en marge le nombre *cent*, c'était [§ 108, (1.)] celui de ses nouveaux confrères; puis, en mettant un zéro devant le chiffre, il écrivit au dessous. *Il n'en vaudront* (valoir, 3. ir.) *ni moins ni plus* (0100). Le président répondit au modeste docteur avec autant de politesse que de présence d'esprit. Il mit le chiffre *un* devant le nombre *cent*, et il écrivit; *Ils en vaudront dix fois davantage* (1100).—*L'abbé Blanchet.*

Une injure qu'on méprise tombe d'elle-même; si on s'en fâche, on la fait valoir.—*Tacite.*

La moquerie est, de toutes les injures, celle qui se pardonne le moiens.—*Platon.*

LESSONS IN ENGLISH.—No. LVIII.

By JOHN R. BEARD, D.D.

THE VERB.

Tense, Mood, Conjugation.

THE English language has variations of form to express variations of person, number, tense, and mood. These variations of form exist within narrow limits.

The term *person* refers to the distinctions which exist among the speaker, the person or thing spoken to, and the person or thing spoken of. The speaker is the first person, the person or thing spoken to is accounted the second person, the person or thing spoken of is accounted the third person.

There are then three persons, and these three are represented by the personal pronouns I, or we *the first person*, thou, or you *the second person*, and he, she, it, or they *the third person*.

Number has a reference to the fact whether a subject indicates one person or thing or more than one. If a noun denotes one object, it is said to be in "the singular number," if a noun denotes more than one, it is said to be in "the plural (from the Latin plus, pluris, *more*) number."

Tense (from the Latin *tempus*) has reference to time. An action may now be going on, then it is said to be in "the present tense." Or an action may be over and gone; then the verb which describes it is in "the past tense." Or again, an action may be about to commence, in some time to come, then the corresponding tense is called "the future tense."

Mood (from the Latin *modus*, *method* or manner) is a term which refers to the manner in which an action is set forth. Thus you may declare simply *he teaches*, when you indicate a fact without any qualification; this is called "the indicative (Latin indico, *I point out*) mood." Or you may say to a tutor, "teach the boy;" then you give a command; in this case the verb is said to be in "the imperative" (Latin impĕro, *I command*) or commanding "mood." Another mood is called "the infinitive (from the Latin in, *not*, and finis, *limit*) mood," that is the indefinite mood, the form of the verb which is not bounded or qualified by person, number or tense. Besides these three moods, namely the *indicative*, the *imperative*, and the *infinitive* commonly set forth in English grammar, the Latins had a subjunctive (or dependent) mood, and the Greeks had an optative or wishing mood.

The term *voice* has reference to the fact whether or not the action of the verb comes back on the subject or actor. If the action of the verb does not come back on the subject or actor, the verb is said to be in "the active voice." If the action of the verb does come back on the subject or actor, the verb is said to be in "the passive" (Latin patior, *I suffer*, *I am the subject of an action*) "voice."

In English, verbs are modified in *person*, *number*, *tense*, and *mood*.

There are then three persons, the first, the second, and the third. There are two numbers, the singular and the plural. The persons and the numbers are indicated partly by inflexions, and partly by the personal pronouns.

There are two tenses, the present tense and the past tense.

There are three moods, the infinitive mood, the imperative mood, and the indicative mood.

All other modifications of verbal meaning are expressed, not by varieties of form, but by varieties of words.

In these statements and definitions I have said nothing of *conjugation*; the reason is that the English verb has nothing which can with propriety be termed conjugation.

As I have not recognised the complicated system of moods and tenses, the idea and model of which were borrowed from the classical tongues, so here I do not adopt the distinction of strong and weak preterites or past tenses lately introduced into English grammar from the Teutonic tongues. The native simplicity of the English grammar should be studiously preserved.

The word *conjugation* is, however, employed in another sense, namely to denote the general form of the verb when presented in full. In this sense conjugation is pretty nearly the same as formation or form, and for it the term model or example, or to take a term of similar import from the Greek (namely, paradigm) may be employed.

PARADIGM (or model) of the transitive verb *touch*; principal parts, *touch*, touch*ing*, touch*ed*.

INDICATIVE MOOD.

	Person.	*Present Tense.*	*Past Tense.*
Singular.	1.	I touch	I touched
	2.	Thou touchest	thou touchedst
	3.	He touches	he touched
Plural.	1.	We touch	we touched
	2.	You touch	you touched
	3.	They touch	they touched

Imperative Mood.

Touch thou
Touch ye.

Infinitive Mood.

To touch.

Participles.

Present, touching *Past*, touched.

The inflexional form *touched* is produced by adding *ed* to touch. This is the usual manner, thus we have learn, learn*ed*, grant, grant*ed*, adorn, adorn*ed*. If, however, the root ends in *e*, we add not *ed* but merely *d*; e. g., improve, improv*ed*, love, lov*ed*. The word love used to be pronounced thus lovĕd, that is, as a dissyllable, the *e* being accented. Now, however, *loved* is pronounced as a monosyllable. This shortening process has been accompanied by a change of the hard dental sound *d* into the soft dental sound *t*, since the latter is more easily pronounced at the end of a word, thus leap*ed* has been softened into leap*t*. The softening of the second syllable has also in some cases had the effect of shortening the first, thus sweep, sweep*ed*, sweep*t*, swept; so *leave* becomes *left*. Sometimes the spelling remains the same and the sole change is in the sound; e. g., present, *I read*, past, *I rĕad*, pronounced as if it were *red*. The tendency to shorten the past form causes the *en* to be dropped in such examples as hide, hid, hidd*en*, forget, forgot, forgott*en*. In *forget*, *forgot*, *forgotten* the past is denoted by two forms, namely for*got* and for*gotten*. Two forms are found in other words, as in sing, s*ang*, s*ung*; see, *saw*, *seen*. It is usual to call one of them "the past tense," and the other "the past participle." The following list exhibits

The Variations of Verbs in the past Forms.

Present tense.	*Past tense.*	*Past Participle.*
Abide	abode	*
Am	was	been
Arise	arose	arisen
Awake	awaked or awoke	
Bear, *to bring forth*	bare or bore	borne
Bear, *to carry*	bore	borne
Beat	beat	beaten
Begin	began	begun
Behold	beheld	
Bend	bent	
Bereave	bereft	
Beseech	besought	
Bid	bid, bad	bidden
Bind	bound	
Bite	bit	bitten
Bleed	bled	
Bless	blessed or blest	
Blow	blew	blown
Break	broke	broken
Breed	bred	
Bring	brought	
Build	built	
Burn	burned or burnt	
Burst	burst	
Buy	bought	
Cast	cast	
Catch	caught	
Chide	chid	chidden
Choose	chose	chosen
Cleave, *to adhere*	cleaved, clave	
Cleave, *to split*	cleft or clove	cloven
Cling	clung	
Clothe	clothed	clad
Come	came	come
Cost	cost	
Creep	crept	
Crow	crowed or crew	crowed
Curse	cursed or curst	
Cut	cut	
Dare, *to challenge*	dared	
Dare, *to venture*	durst	dared
Deal	dealt	
Dig	dug	
Do	did	done
Dream	dreamed or drĕamt	
Dress	dressed	drest
Draw	drew	drawn
Drink	drank	drunk
Drive	drove	driven
Dwell	dwelled or dwelt	
Eat	eăt or āte	eaten
Fall	fell	fallen
Feed	fed	
Feel	felt	
Fight	fought	
Find	found	
Flee	fled	
Fling	flung	
Fly	flew	flown
Forsake	forsook	forsaken
Freeze	froze	frozen
Freight	freighted	freighted or fraught
Get	got	got or gotten
Gild	gilded	gilded or gilt
Gird	girded	girded or girt
Give	gave	given
Go	went	gone
Grave	graved	graven
Grind	ground	
Grow	grew	grown
Have	had	
Hear	heard	
Hang	hanged or * hung	
Hew	hewed	hewn
Hide	hid	hidden
Hit	hit	
Hold	held	
Hurt	hurt	
Keep	kept	
Knit	knitted, or knit	
Know	knew	known
Lade	laded	laden
Lay	laid	
Lead	led	
Leave	left	
Lend	lent	
Let	let	
Lie, *to lie down*	lay	lain
Load	loaded	loaded or laden
Lose	lost	
Make	made	
Meet	met	
Mow	mowed	mown
Pay	paid	
Put	put	
Read	rĕad	
Rend	rent	
Rid	rid	
Ride	rode	ridden
Ring	rang	rung
Rise	rose	risen
Rive	rived	riven
Run	ran	run
Saw	sawed	sawed or sawn
Say	said	
See	saw	seen
Seek	sought	
Sell	sold	
Send	sent	
Set	set	
Shake	shook	shaken
Shave	shaved	shaven
Shear	sheared	shorn
Shed	shed	
Shine	shone	
Shoe	shod	

* A blank is left when there is no specific form for the past participle, and the past tense is used for it.

* The two forms are used in different applications; we say "the man was hanged at Tyburn" and "the clothes were hung in the wardrobe."

Present Tense.	*Past Tense.*	*Past Participle.*
Shoot	shot	
Show	showed	shown
Shred	shred	
Shrink	shrank	shrunk
Shut	shut	
Sing	sang	sung
Sink	sank	sunk
Sit	sat	
Slay	slew	slain
Sleep	slept	
Slide	slid	
Sling	slung	
Slink	slank	slunk
Slit	slit	
Smite	smote	smitten
Sow	sowed	sown
Speak	spoke	spoken
Speed	sped	
Spend	spent	
Spill	spilt	
Spin	span or spun	spun
Spit	spat	spitten
Split	split	
Spread	spread	
Spring	sprung or sprang	sprung
Stand	stood	
Steal	stole	stolen
Stick	stuck	
Sting	stung	
Stink	stank	stunk
Stride	strode	stridden
Strike	struck	struck or stricken
String	strung	
Strive	strove	striven
Strew or strow	strewed or strowed	strown, strewed, or strowed
Swear	swore	sworn
Sweat	sweat	
Swell	swelled	swollen or swoln
Swim	swam	swum
Swing	swung	
Take	took	taken
Teach	taught	
Tear	tore	torn
Tell	told	
Think	thought	
Thrive	throve	thriven
Throw	threw	thrown
Thrust	thrust	
Tread	trod	trodden
Wax	waxed	waxen
Wear	wore	worn
Weave	wove	woven
Weep	wept	
Win	won	
Wind	wound	
Work	worked or wrought	
Wring	wrung	
Write	wrote	written

I have drawn up this list in agreement with the best usage at the present time. A careful study of this list will disclose several facts.

Some verbs have no separate form for the past tense, such are *knit, let, rid,* &c.

The past form is often nothing more than the present abbreviated; e. g., *breed, bred*; *chide, chid*; &c.

Sometimes the diversity is merely in the spelling, as pa*id* for *payed* and sa*id* for sa*yed*.

The past is produced by a change of vowels, thus—

A is changed into u; e. g., dare, durst.

a	,,	into e	,, fall, fell
a	,,	into o	,, break (pronounced *brake*), broke
i	,,	into ou	,, fight, fought
i	,,	into u	,, fling, flung
i	,,	into a	,, give, gave
i	,,	into o	,, rise, rose
u	,,	into a	,, run, ran
e	,,	into a	,, see, saw
e	,,	into o	,, tell, told

The part of one or two verbs comes from another verb than that from which the present is formed; in the verb *to be*, we have three primitive forms, *be, am, was*. *Go* and *went* are from two separate verbs, of which *go* is a defective in the past, and *went* in the present.

Some forms are archaic (*old*) or even obsolete (*out of use*); e. g., *beholden* for which we now say *indebted*; *cloven* is hardly used except in speaking of the "cloven tongues" (Acts ii. 3.); *gotten* has been superseded by its abbreviation *got*. *Wist* (Acts xxiii. 5.) also *wot* (Phil. i. 22.) are past forms of "to wit" from the German *wissen, to know*, connected with our *wise* and our *witch* and *wizard*. *Quoth* (said) is an antiquated past tense of quote, *to cite*.

SKETCHES FOR YOUNG THINKERS.

INTRODUCTION.

YOUNG thinkers form a most important section of the human family. The aged cannot remain on the earth for ever, and the prospect would be indescribably hopeless were there no rising intelligences preparing to take their places and discharge their duties. Special attention should be devoted to the young; they constitute the *embryo* of the succeeding generation. They are the *world* in an incipient state, and therefore should be carefully sheltered from the rude blast, and nurtured into an intelligent and vigorous manhood.

Young men are being cared for,—nay, more, they have begun *to care for themselves*, and this is ever a sign of prosperity. "Heaven helps those that help themselves,"—is an aphorism as true as it is beautiful. Everywhere "Young Men's Christian Associations," "Mental Improvement Societies," and similar institutions are rising into existence. These are *blessings* to our land. They tend, and will tend more and more, to preserve peace and good-will, better than standing armaments and all the destructive artillery of war. They are *moral bulwarks; intellectual arsenals*. They fight not with "carnal weapons." Their battering-ram is love and light, and their cannon, deeds of beneficence and mercy. The poet has sung,

> "Britannia needs no bulwarks,
> No towers along the steep."

Of whatever other application these words are capable, their loftiest meaning can only be realised in the universal spread of knowledge and purity throughout the world. In this long-looked-for period, the world will need neither "bulwarks nor towers," every man will beat his sword into a ploughshare, and the whole globe will constitute the pavilion of God. To look onward to such a time is not to be the dupes of a visionary enthusiasm, but to trust in the declaration of Him who is faithful and true.

These sentiments apart, we look to the young men of Britain for examples in everything that is noble, learned, and good. The facilities which are placed at their service are all but innumerable. One desideratum, long wanted, is now supplied, *a periodical, devoted largely, if not exclusively, to the enlightenment, cultivation, and refinement of young men*. The "Popular Educator" is this periodical. It has met with success; young men do patronise their own literature. What is especially devoted to them they have especially supported.

One word about the succeeding sketches. They constitute a small token of deep interest on behalf of young thinkers. The writer makes no pretension to originality. These opinions, arguments, and exhortations are submitted not in a spirit of infallible and imperious dogmatism,—but in fraternal regard and a desire to increase the happiness and well-being of his own class. Criticism may see much to elicit remark; yet amidst imperfection, there may be some hint suggestive of a profitable course of procedure. There is not a single point elaborated to its full extent, the reason of which will be found in the process of reading. It is perhaps superfluous to add, that the writer is indebted to many sources for the numerous illustrations which are given.

This series of papers is a *voice* to a class. Many voices have sounded in the same direction, in loftier and more thrilling tones; this will fall in with the general chorus, and perhaps deepen a little, the powerful appeals constantly made to British young men. This is its main purpose and highest ambition. In blessing a *young man, a host* may be benefited. He is the first of an increasing and multiplying series. He will transmit to the generation yet unborn the knowledge which he has industriously acquired.

To impart wisdom is better than to confer wealth, though he who can bestow both is greater than he who can only bestow one. God gives both, in this world and in the next. All external possession is unenduring,—all moral and intellectual is self-propagating, and deposited where "neither moth nor rust doth corrupt, and where thieves cannot break through and steal." He whose treasure belongs to this class will "receive his own with usury."

CHAPTER I.

INTELLECTUAL EXCELLENCE.

Mental independence is the birth-right of man—a birth-right, indeed, often bartered for temporary elevation or secular subsistence,—nevertheless, in its original bestowment it is marked with the impress of the divinity, and is intended to be preserved in all its integrity and incomparable worth. Mental vassalage is the most degraded and ignoble serfdom in which it is possible for man to be enthralled. The shackles of physical slavery are as the regalia of royalty, when contrasted with the fetters of entramelled thought. The groans and lamentations of the suffering bondsmen are as music, compared with the stifled accusations and agonizing oppressions of the man who has "sold his birthright," and who dares not give utterance to the wrongs he is compelled to endure. All men, however, cannot be bound. Having correctly appreciated the value of mental independence, they cling to it with unyielding tenacity, determined to excercise their prerogative while life shall endure. Poverty, obscurity, and labour, may be their portion, but the noble mind looks above and beyond all external hindrances; this mind conquers difficulties, it assails every obstacle with victorious strength, and feels re-animated, and re-inspired, after every conquest. Triumph imparts confidence. The arm which has once obtained victory is ready for encounter, and the mind which has scaled one mount of difficulty, is thereby increasingly prepared for attempting more wonderful and magnificent exploits. The records of biography are filled with illustrious confirmations of these sentiments. To those records we will have occasion to appeal in the course of these sketches, and to adduce therefrom numerous examples, verifying and illustrating the proposition we have undertaken to examine. Mind is frequently aroused and enkindled by the efforts of kindred mind. "As iron sharpeneth iron," so does the energy of one intellect impress and invigorate all within its circle. Biography has done much to elicit the latent abilities of many a youth. As the intellectual Elijah has ascended to his throne, his mantle has often been caught by an aspiring and emulating Elisha.

It was a remark of Sir William Jones, that "what has been done by one man can be done by another," and in remembrance of this, he assiduously pursued his studies, until he raised for himself a monument which will not decay, so long as literature continues to occupy the proud position which is its due. Left an orphan at three years of age, he knew not the value of paternal counsel, but he was under the superintendence of a mother, who lived in her boy, and was desirous for his intellectual advancement. Her uniform reply to the boundless inquisitiveness of her son is not a little remarkable; instead of satisfying his curiosity, by any endeavour on her part to solve his problems, she contented herself by answering, "*Read and you will know*;" he did read, and the world remembers him as an intellectual prodigy!

The independence of the mind is a necessary element of its excellence. Where man has allowed his mind to be bound by external influence, he can lay no rightful claim to mental purity, uprightness and fearlessness. He is remarkable only for cowardice. He can never be a *leader*; he must ever follow in the wake of one mightier and more influential. He may entertain opinions, but has not the magnanimity to avow and defend them. He treads cautiously and speaks with bated breath, lest in a luckless hour he may incur disapprobation, which would crush his timid and dependent spirit. Such men are not rare; they are to be found in every town and city, if not in every social company in the land. Such individuals can boast a species of heroism. They are always ready to meet battle in the distance, can deal mortal blows to phantoms of their own creation, and are marvellously fond of seeing the "ocean into tempest wrought, to waft a feather or to drown a fly." But in the hour of execution their courage fails, and they "hide their diminished heads." In this case, there is wanting true mental independence, and hence, in the full acceptation of the term, there is no essential excellence. It is possible however, to confound *independence* with a self-confident, noisy, and inflated egotism. Between the two, there is the widest difference. The man who is mentally erect and independent, does not exhaust himself in "beating the air," or in exhibiting his own strength. He "does his spiriting gently;" he is calm majestic and deliberate; but having once taken his position, no sophistry, however dexterous, no bribe, however munificent, no patronage, however distinguished, will render him traitorous to truth. True greatness in this, as in every other instance, is quiet—unobtrusive—retiring. Deep rivers glide silently onward, shallow streams announce their own presence. In inquiring, therefore, whether we possess this mental independence, it is necessary that we should carefully distinguish between things that differ. This element or manifestation of intellectual excellence is entirely independent of social position. It is readily acknowledged that the man who has ample resources at command, who can clothe "in purple and fine linen" and "fare sumptuously every day," may exercise independence of thought and action; the man who, in an accomodated sense, can proclaim himself 'monarch of all he surveys,' may declare with freedom the sentiments he loves; but the man who is doomed to eat bread by the "sweat of his brow" is held by many to be less free in this respect. Happily, the land in which we live is becoming more and more distinguished for liberal and enlightened views on this matter. The poor man is rising to his level, and exercising the common prerogatives of manhood; men are not now measured so much by what they *possess*, as by what they really *are*; "the mind's the standard of the man," is a sentiment now more universally acknowledged in England than perhaps it ever was in any period of her history. We by no means declare that such is universally the case. Much misconception still prevails, but we believe that the morning of a day is now dawning, in which man shall be regarded in a proper light, and treated with becoming respect by men. We may venture to affirm, without exaggerating the truth, that mental independence has seen more pleasing developments in England than in any or all other countries together. There are many noble exceptions, but the affirmation is substantially correct. There have been men who have defied poverty and submitted to even social indignity, rather than waive their right of private judgment. Such men do honour to humanity, and are in reality the brightest ornaments of the nation. Man is not to be estimated by his wealth, his political or social status; he is to be measured by what is *in* him, rather than what is *out* of him and *about him*.

(*To be continued.*)

A KEY TO THE EXERCISES IN THE LATIN LESSONS.

(*Continued from page* 87, *Vol. III.*)

By JOHN R. BEARD, D.D.

Page 167, col. 2, vol. II.—LATIN-ENGLISH.

What person that has been well trained and instructed in a virtuous family, is not displeased with sheer baseness, even though it may not be about to injure him? Carthage was destroyed when it had stood 667 years; I dread war cloaked with the name of peace; philosophers have unravelled the intricate nature of many things; will that, which the minds of all have despised and rejected, ever please you? the soldiers abandoned the unarmed citizens in the very crisis of danger; when the mind, recognising and comprehending virtues, shall have departed from the service and gratification of the body, and shall have overcome pleasure, and shall have escaped all fear of death and woe, and shall have taken upon itself the worship of God and pure religion, and shall have sharpened its perception so as to love good things and reject the contrary, then our life will be most happy; do you believe that the prosperity of the wicked has disproved the goodness of God? Dejanira clothed Hercules in a tunic dyed with the blood of the Centaur; Hippias, the sophist, boasted, that he was not only acquainted with all arts, in which liberal and noble doctrines were contained, but that he had made with his own hand the ring which he had, the cloak with with he was clad, and the shoes with which he was shod.

Page 167, col. 2, vol. II.—ENGLISH-LATIN.

Sophista Graecus annulum quem habebat, pallium quo vestitus erat, soccos quibus indutus erat, suâ manu confecit; idem sophista Graecus gloriatus est, se omnes artes liberales literasque scire; certum est nullum animum omnes scientias unquam continuisse; pallium tibi dabo tauri sanguine tinctum; scelus tuum Dei bonitatem non redarguit; mariti uxores in discrimine periculi non destituent; fac ut animus discedat a corporis obsequio; non corporis voluptatibus opprimar; putasne te mortis timorem effugiturum esse? pauci omnem mortis timorem effugerunt; ne time dolorem; bonos mors non laedet.

Page 168, col. 1, vol. II.—LATIN-ENGLISH.

Men have dug out metals which had been buried in the earth; the soldiers behaved so savagely towards the citizens of the captured city that they seemed to have put off all humanity; the law of God is not written, but innate, in which we are not instructed (instituti) but are imbued with it; there is no one so monstrous whose mind a recognition of the gods has not imbued; we imbue the tender mind of the boy with the precepts of virtue; the reflection that all human affairs are frail and transitory, lessened and washed away all my troubles; those things which have been observed in the practice and treatment of discourse, have been indicated by words and arranged in parts by learned men; the riches which flocked to Rome from foreign nations destroyed the discipline and strictness of her morals; as the payments which the general had promised to the soldiers were not paid, sedition was aroused.

Page 168, col. 1, vol. II.—ENGLISH-LATIN.

Stipendia quae militibus promisi persolvam; putasne regem stipendia quae militibus promisit persoluturum esse? nuntius dixit ducem non stipendia quae militibus suis promisisset persoluturum esse; quis nautis persolvet haec stipendia maxima? Britanniae regina Magnae persolvet, quum ea promiserit; nautaene haec stipendia meriti sunt? in pugnâ nautae omnem exuisse timorem videbantur; liberorum animi amore parentum a naturâ imbuti sunt; liberi parentibus educendi et instruendi sunt; mater mea deficit; rex fratrem meum urbi praefecit; lachrymas dilue tuas; non possum dolorem meum diluere; paterne tuus diluit molestias suas? non vero, sed eas extenuavit, Deo adjuvante; milites designavit ad mortem; quae observavi in usu scribendi, haec in partes distribuam.

Fables of Æsop.

THE SHE-GOAT AND THE WOLF.

A wolf seeing a she-goat standing upon a lofty rock, said, "Why do you not leave those naked and barren places, and come down hither to the grassy plains which offer you pleasant pasture?" To which the she-goat answered, "I have no mind to prefer pleasantness to safety."

THE BELLY AND THE MEMBERS.

The members once said to the belly, "Do we always nourish you by our attention, while you yourself enjoy the greatest ease? we will not do it." So while they withheld food from the belly, the body became weak, and the members repented too late of their jealousy.

THE DOG AND THE OXEN.

A dog lay in a manger, and by his barking drove away the oxen from the fodder. To which one of the oxen said, "How great is that envy of yours, that you will not suffer us to eat that food which you yourself are neither willing nor able to take!" This fable (fabula) shows the true character of envy.

Page 168, col. 2, vol. II.—LATIN-ENGLISH.

It is known that the colonies of the Tyrians were spread throughout almost the entire circle of the lands; let us think that in death a haven and refuge have been prepared for us; whither I wish it were allowed me to be borne in full sail; Hannibal was recalled from Italy to defend his native country; precepts profit nothing, as long as error is diffused over the mind; we are all inflamed with a desire of living happily; a great number of coins have been coined this year; grief lacerated, wasted, and entirely wore down my mind; the letters of the epigram inscribed on the monument had been worn away by age; the soldiers vigorously defended the city attacked by the enemies; formerly a vast quantity of gold and silver was dug up in Spain; the soldiers, seized with fury, stabbed their general; the horse suddenly fell, and threw the captain off upon his head; we swallow our food chewed and nearly in a liquid state that it may be more easily digested; the more we comprehend in mind and thought the power of virtue, the more we shall admire it; the betrayers of the city having been seized were put to death before the eyes of all the citizens; do you see that the countenances and eyes of all are turned towards you? many have turned their skill in speaking to the destruction of men.

Page 168, col. 2, vol. II.—ENGLISH-LATIN.

Convertesne facultatem tuam dicendi ad patriae perniciem? facultatem meam dicendi convertam ad omnium bonum; facultatem suam dicendi ad patriae salutem conservationemque convertit; proditor deprehensus in conspectu civium necabitur; cave ne equus corruat, teque lapsum super caput effundat; militesne ducem confodient? hic liber vetustate exesus est; regina ingentem nummorum numerum procudet; nuntius animum meum laceravit; animus meus conspectu mortis mariti laceratus est; senes juvenesque vivendi cupiditate incendentur; non potes verum videre, quamdiu error tuae menti offusus est; in Italiam provectus est; ad illas provehentur oras; dux urbem fortiter defendit; urbs a civibus bene defendetur; Britanniæ coloniae brevi toto orbe terrarum diffundentur.

Page 168, col. 2, vol. II.—LATIN-ENGLISH.

Whithersoever you turn, whether with your eyes or with your mind, you will perceive all things to be full of divine goodness; Alexander, king of the Macedonians, cut the Gordian knot with his sword, doubtless distrusting that it would be untied by (solutum) him; when Hannibal was crossing the Alps, many rocks of great magnitude were split; who has torn your garment? what! is it torn? it is torn; Pompeii sank by an earthquake; who knows not that amongst the Romans eloquence attained to the highest honour? Caesar, trusting to the valour of his soldiers, attacked the hostile army without delay; your letter banished every scruple from my mind; it is the duty of a good king, when he sees the republic tottering and convulsed, to assist his country.

Page 169, col. 1, vol. II.—ENGLISH-LATIN.

Pauci divinae bonitatis plena esse omnia negaverunt; se oculis ad hominum mala convertunt; oculi in hominum mala figuntur; est boni praeceptoris officium omnia interpretari discipulis suis: mihi est scrupulus id quod vidi declarandi; illius testimonium testis omnem scrupulum mihi ex animo evellit; eloquentia apud Romanos ad summum honorem adscendit; vestis tua discindetur; jam discissa est; discissane est mea vestis? non est discissa, sed discindetur; quocunque se oculis convertas, omnia tibi pulchra videntur; diffiditne Alexander nodum Gordii? cur Alexander nodum Gordii diffidit? quia diffisus est se eum solvere posse; quum Dominus resurgeret, saxa diffissa sunt.

Page 184, col. 1, vol. II.—LATIN-ENGLISH.

It is necessary that you should both learn and confirm that which you have learnt by action; things ill-acquired depart ill; as the swallows are present in the summer time, but retire driven off by the cold, so false friends are present in the prosperous period of life, but as soon as they see the winter of fortune, they all quickly depart; it is uncertain what is about to happen; what has fallen to the lot of each, that let each retain; Alexander grieved that his old and guiltless friend Clitus had been killed by him; to have faithfully learnt the liberal arts softens the manners and does not allow them to be barbarous; benefit attained through a friend does not gratify so much as the love itself of a friend; Hannibal was not deceived (in thinking) that the enemy would carry on the affair more fiercely than advisedly; from the time when money began to be in honor the true honor of actions declined; the ancient wood fell which no one cut down with iron; Epaminondas is said to have played excellently on the lyre; Cato narrates that the ancient Romans, at their feasts, sang the praises and virtues of illustrious men to the sound of the lute; the signal is given to the companies, and the horns and trumpets have sounded; in the battle fought at Trasimenus, in the year 217 before the birth of Christ, 15,000 Romans were killed in the action; 10,000 scattered in flight throughout Etruria sought the city by various routes; let it be granted that Numantia was laid waste and overthrown by Scipio; if that which I said was false, why did you not refute me? the enemy made peace with us, that we might restore the soldiers who had been captured by us; Cleomenes, the Lacedæmonian, when a truce of thirty days had been concluded with the enemy, laid waste the country by night, because (he said that) a treaty of days not of nights, had been made; when the general had taken the city, he spared all the buildings public and private, sacred and profane, just as if he had entered the city with his army to protect, not to capture it; when the city was taken, the soldiers, seized with fury, swore they would neither spare those worn down with age, nor women, nor infants; the similarity of eggs to one another (is noticed) in a proverb; yet there were many persons at Delos who, keeping a great number of hens, were accustomed, when they had seen an egg, to say which hen had laid it; believe me you will acquire for yourself the greatest praise by your virtue

Page 184, col. 1. vol. II.—ENGLISH-LATIN.

Gallina ovum peperit; gallinae ova parient; quot ova gallinae tuae in dies pariunt? mater tua filium peperit; dux publicis aedificiis non parcet; miles, furore captus, ducem suum occidit; putasne hostes aetate confectis parsuros esse (will spare)? Ignoro hostesne mulieribus infantibusque parsuri sint; induciae viginti dierum pactae cum hoste sunt; voces concinuerunt; signo dato frater tuus cecinit ad fides clarorum virorum laudes; viginti millia militum nostrorum caesa sunt.

Page 184, col. 2, vol. II.—LATIN-ENGLISH.

Catiline laid many snares for the life of Cicero, but Cicero crushed all his plans; we admire those illustrious men, who have always striven with the greatest efforts and dangers for the highest honour and glory; the garrulous man has quite stunned me with his chatter; tell me by whom these grains have been pounded; Metellus goes into Numidia, the citizens expecting great things from him, for before that time the resources of the Romans in Numidia had been weakened, and those of the enemy increased by the avarice of the magistrates; Verres, as soon as he entered the province, gave himself up altogether to the greatest avarice; I have glanced through the whole book; in one year two temples in the capital and many other buildings were struck with lightning; as often as Agesilaus engaged with the enemy, he repulsed much larger forces of his adversaries; you have paid the severest penalties for your rashness; all the Carthaginians exclaimed together that enough punishment had been inflicted on them for the rashness of one, namely Hannibal; the soldiers having entered the city, demanded neither victuals or drink, nor laid down the burden of their weapons; you have removed from my mind the doubt, which harassed and afflicted me day and night; if poverty has gnawed, if ignominy has vexed, if exile has shed over any gloom, philosophy employs for each suitable case consolation; a narrative embellished with various characters, and interspersed with conversations, affords pleasure; Aristarchus, the grammarian, distinguished by certain marks those verses of Homer which seemed to him spurious; all the citizens, worn out by the disasters of war, eagerly besought peace; the Romans had wines stowed away in their cellars seasoned with pepper and honey-water; while the Graecian states each desired to rule, they all lost their power; though all things are lost, virtue supports itself.

Page 184, col. 2, vol. II.—ENGLISH-LATIN.

Haec vestis coloribus distincta est; copiis suis interfectis, dux pacem expoposcit; quid in doliario tuo conditum habes? ignoro quot res in doliario meo conditae sint; dolia ita distincta sunt, ut singula agnoscantur; hostes insidias regi tendent; mihi crede hostes insidias exercitui nostro tetenderunt; homines magni ad magna contendent; grana tunsa sunt; illi canes aures meas tutuderunt; metuo ne haec domus de coelo tangatur; Jovis templum dicitur de coelo tactum esse; amici tui per urbem percucurrere; urbemne petent? immo diversis itineribus Londinum petent; certum est Londinum adhuc a Gallis non captum esse; Gallisne Londinum capient? non puto Gallos Londinum unquam capturos esse; male parta nihil proficiunt; estne praesto tuus amicus? amici sereno vitae tempore praesto sunt; amici falsi hieme fortunae devolant; nescio quid tibi casurum sit; Alexander Clitum occidit; Clitus ab Alexandro occisus est; didicistine artes ingenuas? filii mei ingenuas discent artes; Epaminondas dicitur fidibus canere didicisse.

LESSONS IN GEOMETRY.—No. XXI.

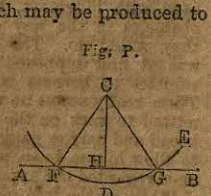
LECTURES ON EUCLID.

PROP. XII. PROBLEM.

To draw a straight line perpendicular to a given straight line of unlimited length, from a given point without it.

Let AB be the given straight line, which may be produced to any length both ways; and let C be a point without it. It is required to draw a straight line perpendicular to AB from the point C.

Fig. P.



Take any point D upon the other side of AB, and from the centre C, at the distance CD, describe (*Post.* 3) the circle EGF meeting AB in F and G. Join CF and CG, and bisect (I. 9), the angle FCG by the straight line CH, meeting AB in the point H. The straight line CH, drawn from the given point C, is perpendicular to the given straight line AB.

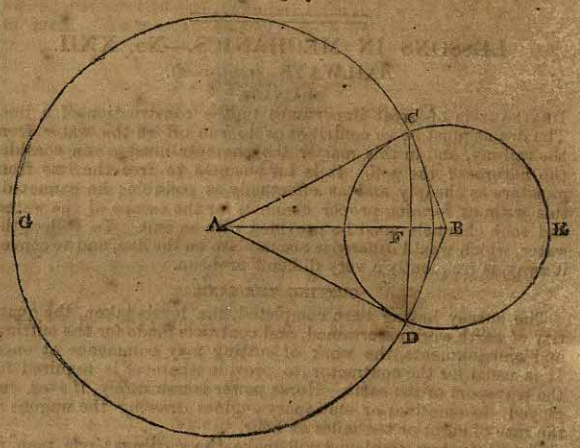
Because FC is equal to CG (*Def.* 15), and HC common to the two triangles FHC and GHC, the two sides FC and CH are equal to the two sides GC and CH, each to each; and the angle FCH is equal to the angle GCH (*Const.*); therefore the base FH is equal to the base GH, and the angle CHF (I. 4) to the angle CHG; and they are adjacent angles. But when a straight line standing on another straight line makes the adjacent angles equal to one another, each of them is a right angle, and the straight line which stands upon the other is called a perpendicular (*Def.* 10) to it. Therefore from the given point C a perpendicular CH has been drawn to the given straight line AB. Q.E.D.

Scholium 1. In the preceding construction and demonstration of the 12th Prop. we have departed a little from the method of Euclid. In the construction, we have employed the 9th. Prop. instead of the 10th.; and in the demonstration, the 4th. Prop. instead of the 8th. Euclid, of course, had the same choice before him; but he preferred that which we have given in Cassell's edition. Both methods are equally eligible in point of accuracy, and there is little difference in point of length. We have given the above, on the principle that it is always adviseable to shew a student different methods of solving a problem, in order to excite his curiosity, and stir up his inventive powers, as well as to extend his knowledge of the science.

Scholium 2. In the construction of this problem, it was necessary to premise that the given straight line AB must be of indefinite length, otherwise the point C might be so situated with respect to the straight line, that the circle described from that point might not intersect it in two points as required for the solution. Moreover, Euclid has assumed (taken for granted without demonstration), that a circle will cut a straight line in two points, and only in two; but the demonstration is given in Prop. II., Book III.

EXERCISE TO PROP. XII. *From a point nearly in the perpendicular to a straight line at one extremity, but within the right angle, to draw a straight line which shall make a right angle with it.*

Fig. Q.



In fig (Q) let AB be the given straight line, and C the given point, as required by the general enunciation; then, by this requirement, the point A is on the one side of the intended perpendicular, and the point B on the other side. It is required to draw from the point C, a perpendicular to AB.

Join AC and CB. From A as a centre, with distance AC, describe the circle CGD; and from B as a centre, with distance BC, describe the circle CED. These circles, having their centres on opposite sides of the intended perpendicular, must intersect each other in two points, as in the preceding problem; let these points be C and D. Join CD, and let it meet AB in F. The point F is the perpendicular to AB, as required.

Join AD and BD. Because in the two triangles ACB and ADB, the two sides AC and AD are equal to each other (*Def.* 15), and the side AB is common to both; therefore, the two sides CA and AB are equal to the two sides DA and AB, each to each; but the side BC is equal to the side BD (*Def.* 15); therefore, the angle CAB is equal to the angle DAB (I. 8). Again, because in the two triangles CAF and DAF, the two sides AC and AD are equal to each other, and the side AF is common to both; therefore, the

two sides CA and AF are equal to the two sides DA and AF, each to each; but the angle CAF is equal to the angle DAF, as has been proved; therefore, the triangle CAF is equal to the triangle DAF, and the remaining angles are equal to each other (I. 4); viz., the angle CFA to the angle DFA; but these angles are adjacent to each other; therefore, each of them is a right angle (*Def.* 10); wherefore, the angle CFA is a right angle. In the same manner, it may be shewn that the angle CFB is a right angle. But the angles CFA and CFB are adjacent angles; therefore, the straight line CF is perpendicular to AB (*Def.* 10), and is drawn from the given point C*. Q.E.F.

Scholium 1. In the construction and demonstration, the same principle must be assumed twice, which was only assumed once in Euclid's Prop. 12. If, however, a principle be correct, and if it be lawful to assume it once, it is equally lawful to assume it any given number of times.

In the Gower Street edition of Euclid, it is very properly remarked on this subject, that "the centre of the circle being on one side of the straight line, and a part of the circumference on the other, it is not difficult to perceive that a part of the circumference must also be on the same side of the straight line with the centre; and since the circle is a continued line (*Def.* 15) it must cross the straight line twice." The student may also refer to the first axiom which we have added to the third book, in Cassell's edition.

Scholium 2. In the construction of this problem, it may be more convenient in practice to take any two points in AB, near the middle of the straight line, instead of the points A and B themselves. In this case, both points will be on the same side of the intended perpendicular, and the demonstration of the proposition will differ from the preceding in some respects; particularly it will be proved that the perpendicular CF makes a right angle with AB, instead of right angles with it. Nevertheless, it is still perpendicular to AB; for if AB be at right angles to CD, it follows that CD is at right angles to AB.

LESSONS IN MECHANICS.—No. XXII.

RAILWAYS—(*continued*).

DRAINAGE.

DRAINAGE is of great importance in the construction of a line. The drains must be so contrived as to run off all the water from the railway, and in this matter the engineer must again consider the nature of the soil. It is his business to free the line from moisture as cheaply and as effectually as possible; he cannot do this without forming proper channels for the escape of the water, and such channels must be provided with an exit. To collect the water, which would otherwise accumulate on the line, and to convey it away, is frequently a very difficult problem.

CUTTING THE LINE.

The survey having been completed, the levels taken, the quantity of earth work ascertained, and contracts made for the cuttings and embankments, the work of cutting may commence at once. It is usual for the contractor to provide whatever is required for the transport of the earth. Horse power is now rarely, if ever, employed—locomotives or stationary engines drawing the wagons at the rate of eight or ten miles an hour.

The navigators employed will make the cuttings: one man, in an average day's work, will cart fifteen cubic yards of stiff clay, or twenty-five of sand.

The equalisation of the excavations and embankments is another important subject of consideration. The economical engineer will often so contrive as to fill up the valleys with the matter removed from the cuttings, and will do this at a comparatively trifling cost. It can only be done under certain circumstances, and is never successfully accomplished without the engineer has made himself thoroughly acquainted with the nature of the ground, and the contractor has worked with the object of utilising the refuse material.

LEVELS.

It is an advantage, but it is not always possible, that a railway line should be perfectly level. This is sometimes impracticable, and the inclined plane has to be employed. We have not space to enter into the question as to this matter; all that may be said for it, all that may be urged against it, has been written and debated many a time. We may, however, be allowed to avail ourselves of an illustration furnished by an eminent writer on the subject.

In De Pambour's treatise on locomotive engines, the author, after stating that inclined planes are a great obstacle to the motion on railways, supposes, if a train of 100 tons be drawn by an engine on a level, the friction of the carriages will produce a resistance of eight pounds per ton, and consequently the power required of the engine will be 800 lbs. He then supposes the same train ascending an inclined plane at $\frac{1}{100}$; on that plane, besides the resistance owing to the friction of the wagons, a fresh resistance occurs, which is the gravity of the total mass in motion on the plane; that gravity is the force by virtue of which the train would roll back if it were not retained, and is equal to the weight of the mass, divided by the number indicating the inclination of the plane. If, therefore, in this case the load (100 tons) be drawn by an engine weighing 10 tons, the total mass placed on the inclined plane will be 110 tons, or 246,400 pounds; thus its gravity on the inclined plane, at $\frac{1}{100}$, will be $\frac{246,400}{100}$ lbs. = 2,464 lbs. The surface of traction required of the engine on account of that circumstance is, therefore, 2,464 lbs.; and as, on a level, one ton load is represented by 8 pounds traction, 2,464 lbs. represents the resistance that would be offered by a load of 308 tons on a level. The engine which before drew 100 tons must now draw 408 tons, or must exert the same effort as if it drew 408 tons on a level.

From this it appears very clearly that an increased motive power is required to move the same weight on an inclined plane above that which would be necessary on a level. An increased motive power, of course, is more expensive, so that, to put it simply as a question of money, the inclined plane should never be employed where it can possibly be avoided.

BROAD AND NARROW GAUGE.

The width of the gauge, or distance between the rails, is another point of interest.

Parliament, when railways first began, decided that the clear width between the rails should be 4 feet 8½ inches. Since the year 1836, however, this has been optional with the engineer. The Great Western line is 7 feet between the rails. The disadvantages of the broad gauge appear to be the extra expense involved in a broader line, in the necessarily increased outlay for land, and the increased weight brought to bear on the axletrees of the carriages. The battle of broad and narrow gauge is now, however, a thing of the past; the engineer does as he pleases—shareholders permitting.

It is desirable that the surface of the railway transversely should be convex, having a rise of about 3 or 4 inches in the middle, to throw the water into the drains. Stone blocks are sometimes used in preference to timber sleepers.

The rails are, of course, of iron. Cast iron when employed is more brittle than wrought iron, and consequently require an increased area in their section to be equal in strength to the latter. The usual width of the rail at the top is about 2½ inches.

It has been estimated that the wear and tear of waste of the rails is about $\frac{1}{10}$th of a pound per yard per annum, or that $\frac{1}{81}$th inch in depth is annually worn away.

The *plate rail*, says a writer on this subject, was first used in a colliery near Sheffield, 1767. It was a flat bar of cast iron, with an upright ledge; it was in six feet lengths, and the upright and flat part measured in width two inches; they were secured by nails to transverse timber sleepers; they were placed on square wooden blocks, and it was not until the year 1800 that stone blocks were used on the railway at Little Eton, in Derbyshire. Wrought iron rails were first used about 1824; they are now all manufactured in this manner, and rolled out to the form required. The first *edge rail* was of cast iron, and used at Loughborough about the year 1789; its upper surface was level, and that below elliptical. A flange on the wheel guided it along the rail; it consisted of a bar of cast iron about 3 inches thick, increasing towards the top to a breadth of two and a half inches, in which the wheel ran; they were either fixed to wooden sleepers or to stone blocks.

RAILWAY CURVES, SIDINGS, ETC.

Curves in a railway line are not now regarded by engineers with the same disapprobation as formerly. They must, of course, be used with judgment, but they do not present those formidable obstacles in the way of progress which it was formerly affirmed they would do. The locomotive is more readily managed than was at first supposed possible, and, winged horse though he be, submits to harness with a better grace than Pegasus of old. There really seems no very good reason why he should not be permitted to work on the common road as well as on the iron road of broad and narrow gauge. We may before long grow wise enough to allow him to do so, and to smile at the incredulity with which we once regarded the appearance of a steam engine in our streets.

While on the iron roads it is necessary that the locomotive and train should be provided with sidings for the safe passing of slower trains, or security from those of greater speed; sidings are therefore provided on our lines, into which a train may be readily transferred if necessary.

LESSONS ON PHYSICAL EDUCATION.—No. IV.

WRESTLING.

In the exercises of wrestling, the pupils are arranged in a line, and apart from each other at the *full distance*. The following are the words of command which are first given:—

1. *From the right, call your numbers!*

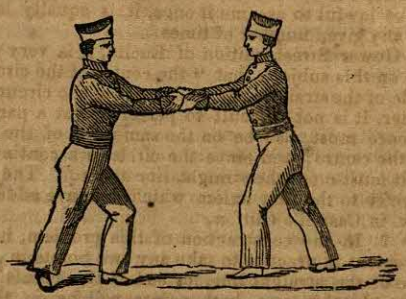
At these words, each pupil, commencing from the right hand, calls his number aloud; that is, the number of the order or place in which he stands; as One, Two, Three, &c. The next words of command are:—

2. *Even numbers, left arms up!*

Fig. 13.

at the second, starting from the left foot, he takes three steps forward, and turns to the right in taking the third, so adjusting his position, that when he stops, he is exactly face to face with his opponent; that is, number 2 faces number 1; number 3 faces number 4; and so on. The raised arms are then replaced in their original position.

Fig. 14.



Exercise I. The words of command are:—

1. *Wrestling with the fingers!*
2. *Even numbers, nails up!*
3. *In position!*

Fig. 15.

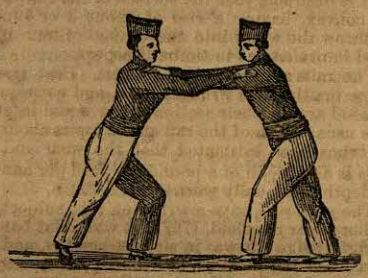


Fig. 16.

3. *To the right, meet your opponents!*
4. *Move!*

At the first of these commands, each pupil whose number is *even*, raises his left arm in the air, having his hand turned towards his body so as to take the nearest course in raising it;

4. *Begin!*
5. *Halt.*

At the second words of command, each pupil, whose number is *even*, raises his arms to the horizontal position, with the palm of the hand forward, and the fingers half-shut. Each pupil,

Fig. 17.

Fig. 18.

whose number is *odd*, raises his arms in the same manner, but with the palm of his hand in a contrary position, and the fingers half-shut. At the third words of command, each pupil clasps his fingers into those of his opponent, and at the same time brings his left foot forward from the right without crossing it, the left leg being stretched but without stiffness, the right leg slightly bent, and the body preserved in a vertical position; his head is also kept upright, and his eyes directed to those of his opponent. At the fourth word of command, the pupils commence a motion of pulling or drawing each other backwards. At the word *Halt*, they cease this exercise, and resume their position as at its commencement. Fig 13.

The same exercise is repeated, but the pupils whose numbers are *odd*, are commanded to obey the second order, viz., *Odd numbers, nails up*, which changes the position of their hands in wrestling.

Exercise 2. The words of command are:—

1. *Wrestling with the wrists!*
2. *In position!*
3. *Begin!*
4. *Halt!*

At the first words of command, each pupil grasps his left wrist with his right hand; at the next, he steps forward from the left foot, with the right leg easily extended, and the left leg slightly bent; he then seizes with his left hand the right wrist of his opponent, their hands being raised nearly to the height of their shoulders, their bodies slightly inclined forward, and their heads erect. At the third word of command, each pupil and his opponent commence jerking and pushing their arms, thus united at the wrists, backwards and forwards, upwards and downwards, to the right and to the left &c. At the fourth, the pupils assume the position they had before commencing the exercise. During their exertions in it, they avoid such violent jerks as would overbalance their opponents and make them fall. Fig 14. This exercise can be varied by making each pupil grasp his right with his left hand, &c.

Exercise 3. The words of command are:—

1. *Wrestling at the shoulders!*
2. *In position;*
3. *Begin!*
4. *Halt!*

At the second word of command, each pupil steps forward from the left foot as in the preceding exercise, places his left hand with the palm resting on the right shoulder of his opponent, the thumb being under the arm, and the four fingers uppermost; he also places his right hand on the left shoulder of his opponent in the same manner, the one arm being placed interiorly, and the other exteriorly, the body inclining forward, and the head erect. At the third word of command, each pupil forcibly pushes his opponent, without jerking him, in order to make him leave his place without attempting to throw him. At the last word, each resumes his initial position. Fig 15.

Exercise 4. The words of command are:—

1. *Close wrestling*
2. *Even numbers, arms up.*
3. *In position!*
4. *Begin!*
5. *Halt!*

At the second words of command, the pupils, whose numbers are *even*, raise their fists as high as they can; at the third, each advances on the left leg so as to place his left heel behind that of his opponent, and thus forcibly to grasp the body of his opponent in his arms, about breast-height. At the fourth, each places his fists on the chest of his opponent, gradually exerting a strong pressure and endeavouring to get them below the waist, so that, by exerting the muscles of his arms, he may forcibly oppose the introduction of his opponent's arms, and disengage himself from his grasp. At the fifth, the wrestlers who have not succeeded in disengaging themselves cease their exertions and resume their initial position. Fig 16. This exercise may be varied like the former by changing arms and hands. In the preceding exercises, we have not enumerated those violent efforts of wrestling commonly adopted in the ring; we mean those in which each wrestler tries to throw down his opponent. Such exercises, like those of prize-fighting, cannot fairly be classed under the head of Scientific Gymnastics or Physical Education, as they are injurious to the parties who engage in them, and cause the wrestlers to incur very great danger, if not loss of life.

Wrestling, to a certain extent, is sometimes carried on by the use of instruments. These consist of two wooden handles united either by a cord, or by a strong double strap.

Exercise 5. The pupils being *in position*, according to the preceding exercises, each of those whose number is *even* receives one of the single or corded instruments, which he holds in his left hand. These words of command then follow:—

1. *Wrestling with the instrument in the left hand!*
2. *In position!*
3. *Begin!*
4. *Halt!*

At the second words of command, each pupil stands forward on his left leg, places his left arm horizontally with his fingers and elbow as high as the left shoulder, taking the instrument in his left hand, and the cord between the fore and mid finger. At the third word, each pupil produces an alternate motion backward and forward, pulling the instrument forcibly backward in the horizontal direction, and endeavouring without jerking to drag his opponent after him. At the last word, the pupils resume their first position, and those whose numbers are *even*, take the instrument in their right hand. The same exercise is then repeated *mutatis mutandis*. Fig 17.

Exercise 6. Each pupil receives one of the double or strap instruments. The words of command then are:—

1. *Wrestling with the strap instrument!*
2. *In position!*
3. *Begin!*
4. *Halt!*

At the second words, each pupil sits upon the ground, stretches his legs, his knees, and his heels, and places himself so that his feet may be right against those of his opponent; the one whose number is *even* places the instrument at their feet, and each seizes a handle. At the third word, each pupil gradually and without jerking draws his opponent, exerts his greatest strength, and endeavours, if possible, to raise him from the ground. This exercise ceases at the fourth word, in the cases of those pupils whose forces are equal to each other. Those who have overcome their opponents may then strive, in the same way, to ascertain which is the strongest; and at last the general victor of the whole may be discovered.

LESSONS IN ENGLISH.—No. LIX.

By John R. Beard, D.D.

(*Continued from page* 268.)

The verb; *to touch* may be variously modified. As it stands alone, it is independent. "I touch" is a statement which depends on no other word. But by prefixing *if*, I make the statement dependent—"*If* I touch," my touching is now a supposition, and not a fact. *If*, it has been said, is *gif* (that is *give*) in a contracted form. In full, therefore the sentence would be "give (or *suppose*) that I touch." The latter form is a two-fold sentence consisting of *give* and *I touch*. These two are united by *that*. In ordinary use, however, the two are blended together and form "if I touch." Consequently the form "if I touch" may be called elliptical as well as dependent.

In this instance the ellipsis takes place at the beginning. In the ensuing instance, namely "if he touch" it takes place in the middle, that is between *he* and *touch*. One of the words, *may*, *can*, *shall*, *should*, being left out, as "if he *may* touch," "if he *can* touch," &c. I will transcribe an illustration from the Bible (compare 1. Sam. xx. 7; 2 Kings x. 6; Hosea viii. 7; John xv. 18).

"And the king said unto Zadok, carry back the ark of God into the city; *if I shall find* favour in the eyes of the Lord, he will bring me again and show me both it and his habitation; but *if he thus say*, I have no delight in thee; behold here am I, let him do to me as seemeth good unto him" (2 Sam. xv. 25, 26).

Now observe that the two forms "if I shall find" and "if he thus say" stand in precisely the same relation to the remainder of what the king said. Bearing the same relation, they have the same construction. Consequently "if I shall find" and "if he say," are grammatically identical forms. The second form is therefore elliptical, the word *shall* being omitted. The two forms might indeed stand thus:—

Elliptical form.		*Full form.*
If I find	or	If I shall find
If he say		If he shall say

The former is elliptical and dependent and may be called *elliptical-dependent*; the latter is simply dependent.

There are certain verbs which enter into combination with (nearly) all other verbs, and entering into combination with other verbs, variously affect and alter their import. They are commonly called "Auxiliary verbs," because by their aid (in Latin *auxilium*) the other verbs are what is called "conjugated." They are *be, have, do, shall, will, may, can, let, must,* and probably *ought* and *dare*.

Paradigm of the Verb to be.

Principal parts, *to be, being, am, was.*

Independent Form.

		Present tense.	*Past tense.*
Sing.	1	I am	I was
	2	Thou art	thou wast
	3	He is	he was
Plural.	1	We are	we were
	2	You are	you were
	3	They are	they were

Dependent Form.

Sing.	1 If I be	if I were
	2 If thou be	if thou wert
	3 If he be	if he were
Plural.	1 If we be	if we were
	2 If you be	if you were
	3 If they be	if they were

Indefinite form, *to be*; imperative form, *be thou, be ye*; present participle *being*; past participle *been.*

The only forms that really belong to the verb *to be*, are *be*, being, *am, art, is, was*, wast, *were*, wert.

Be used to be employed where we now use *am, art, is*, &c., thus I *be*, thou *bees*, he *bist*, we *be*, you *be*, they *be*. Hence the form, commonly called a subjunctive mood, namely "*if I be*" "*if he be*," &c.

I have given one indefinite form namely *be* in *to be*; e. g.

"To *be* contents his natural desire."—*Pope.*

But *being* which appears as a noun; e. g., "our being's end and aim," may also appear as an infinitive, that is as a second indefinite form; e. g.

Being good is being happy; that is
To be good is to be happy.

This second indefinite form, however, is not peculiar to the verb to be. It is found in other verbs; e. g.

Rising early conduces to health.

Parts of the verb *to be* enter into union with transitive verbs, forming what is called "the passive voice." Take as an example the transitive verb *to touch.*

Independent Form.

		Present tense.	*Past tense.*
Sing.	1	I *am* touched	I *was* touched
	2	Thou *art* touched	thou *wast* touched
	3	He *is* touched	he *was* touched
Plural.	1	We *are* touched	we *were* touched
	2	You *are* touched	you *were* touched
	3	They *are* touched	they *were* touched

Dependent Form.

		Dependent form.	*Elliptical form.*
Sing.	1	If I *be* touched	if I *were* touched
	2	If thou *be* touched	if thou *wert* touched
	3	If he *be* touched	if he *were* touched
Plural.	1	If we *be* touched	if we *were* touched
	2	If you *be* touched	if you *were* touched
	3	If they *be* touched	if they *were* touched

Indefinite form, *to be touched*; imperative, *be thou touched*; present participle, *being touched. Being touched*, may be used as an indefinite form, that is, as an infinitive mood; e. g.

Being touched for scrofula is now gone out of fashion.

Exercises.

Form simple sentences out of each of these differently accented pairs of words:—

Nouns or Adjectives.	*Verbs.*	*Nouns or Adjectives.*	*Verbs.*
Fer'ment	ferme'nt	Pro'ject	proje'ct
Fre'quent	freque'nt	Pro'gress	progre'ss
Im'port	impo'rt	Pro'test	prote'st
Im'press	impre'ss	Re'bel	rebe'l
In'cense	ince'nse	Re'cord	reco'rd
In'crease	incre'ase	Re'fuse	refu'se
In'sult	insu'lt	Su'bject	subje'ct
O'bject	obje'ct	Su'rvey	surve'y
Pe'rfume	perfu'me	To'rment	torme'nt
Pe'rmit	permi't	Tra'nsfer	transfe'r
Pre'fix	prefi'x	Tra'nsport	transpo'rt
Pre'lude	prelu'de	Un'dress	undre'ss
Pre'mise	premi'se	Up'start	upsta'rt
Pre'sage	presa'ge		
Pre'sent	prese'nt		
Pro'duce	produ'ce		

Exercises for Parsing.

If thou wilt think evil of thy neighbour, soon shalt thou have him for thy foe.

Thou canst not shape another's mind to suit thine own body, think not then to be furnishing his brain with thy special notions.

Thou hast gained, in the furnace of affliction, self-knowledge, patience and humility.

Mind is the perpetual motion, for it is a running stream from an unfathomable source, the depth of the divine intelligence.

Where thou perceivest knowledge, bend the ear of attention and respect; but yield not further to the teaching than as thy mind is warranted by reasons.

Many a beggar at the cross-way, or grey-haired shepherd on the plain, hath more of the end of all wealth, than hundreds who multiply the means.

Happiness is a road-side flower, growing on the highway of usefulness.

Experience hath a lesson which a man will do well if he learn; by checking the flight of expectation, to cheat disappointment of its pain.

A true sarcasm is like a sword-stick,—it appears, at first sight to be much more innocent than it usually is, till, all of a sudden, there leaps something out of it—sharp, and deadly, and incisive—which makes you tremble and recoil.

LESSONS IN GREEK.—No. II.

By John R. Beard, D.D.

VOWELS, CONSONANTS, PUNCTUATION.

Preliminary Instruction on the Verb.

The Greek alphabet, consisting of four and twenty letters, is made up of vowels and consonants. The vowels are *α, ε (η), ι, ο, (ω), υ.* According to their quantity, long or short; in other words, accented or unaccented, they may be divided thus:

VOWELS.

Short.	*Long.*	*Doubtful.*
ε̆,	η̄,	ᾰ.
ŏ,	ω̄,	ῐ
		ῠ

By "doubtful" is meant, that the vowels so termed are sometimes short and sometimes long; which they are, in any case, is learnt by usage, particularly by the usage of the poets.

By a union of vowels we produce

THE DIPHTHONGS.

αι,	ει,	οι,	υι,
αυ,	ευ,	ηυ,	ου,

Besides these there are the improper diphthongs, formed by *α, η,* or *ω*, and the iota *subscriptum*, or written under, as *ᾳ, ῃ, ῳ.*

Both the proper and the improper diphthongs are long, or, in other words, receive the stress of the voice in pronunciation.

When two vowels commonly pronounced as one sound (a diphthong) are pronounced separately, a diaeresis (separation) is produced, which is denoted by two dots set over the second vowel; as, *ε̈ι, ο̈ι, α̈υ.*

The consonants are divided, first according to the organs chiefly employed in pronouncing them. Thus, in uttering some, we use the palate or upper part of the throat; these are termed gutturals (Latin, guttur, *a throat*). Others are designated labials, being such as come mostly from the lips (Latin, labium, *a lip*). For the same reason, others again bear the name of linguals (Latin, lingua, *a tongue*).

CONSONANTS.

Gutturals.	*Labials.*	*Linguals.*
κ, γ, χ.	π, β, φ, μ.	τ, δ, θ, λ, ν, ρ, σ.

Another division arises according to the different manner in which the organs of speech act in their formation. Thus we obtain,

The semi-vowels or liquids, λ, μ, ν, ρ.

The sibilant or hissing sound, σ.

The mutes, π, κ, τ, β, γ, δ, φ, χ, θ.

These nine mutes are also divided into three gutturals, three labials, and three linguals. In this division regard is had to the organs of speech. If, however, we give attention to the predominant sound, then we classify these nine mutes thus:—1, those of the *k* sound; 2, those of the *t* sound; and, 3, those of the *p* sound. Once more, they may be considered according to the force or hardness of the utterance, and be separated into three soft, three hard (or middle), and three aspirated. The whole is presented in this tabular view of

THE CONSONANTS CLASSIFIED.

	Soft.	*Hard.*	*Aspirated.*	
Gutturals	κ,	γ,	χ,	K sound.
Linguals	τ,	δ,	θ,	T sound.
Labials	π,	β,	φ,	P sound.

From a union of the mutes with the sibilant σ there are produced these

DOUBLE CONSONANTS.

ψ (ps Psi)	formed of	πσ, βσ, φσ.
ξ (x Ksi)	,,	κσ, γσ, χσ.
ζ (z Zeta)	,,	δσ.

Sometimes a vowel at the end of a word or syllable, standing before another vowel which begins a word or syllable, is elided or struck out, when we produce what is termed elision (Latin e, *out of*, and laedo *I dash*). Instead of the elided vowel, an apostrophe ' is put. Elision takes place in all the prepositions except περι and προ. When prepositions are compounded with verbs that begin with a vowel, the apostrophe is not used; thus, απ' οικου is the elided form of απο οικου, and απεφερον is the elided form of απο-εφερον.

When, however, the two vowels thus coming, the one before the other, are melted or blended together, so as to form one long syllable or diphthong; what is grammatically called crasis (Greek, *a mixing*) takes place. Thus το επος by crasis or krasis becomes τουπος. By resolving the double vowel into its component parts, that is, by the inversion of crasis or by dissolution, you obtain the two words entire; so τουπος becomes το επος; ψνος becomes ὁ ὀινος; also ταγαθα becomes τα αγαθα.

The Greeks paid great attention to euphony, or pleasing sound. Consequently they studied to prevent two vowels from coming in immediate succession, so as to cause an hiatus or stoppage of the flow of the sound, such a stoppage as would take place, if instead of saying an hiatus (Latin, *a gaping*), we were to say a hiatus. To avoid this unpleasant suspension of the breath, we in English convert *a* into *an*. In the same way, and for the same purpose, the Greeks employed an ν at the end.

1, of the dative plural in σι, and adverbs of place ending in σι; as πασιν ελεξα: ἡ Πλαταιασιν ἡγεμονια.

2, of the third person singular and plural ending in σι, as τυπτουσιν εμε; τιθησιν εν τῃ τραπεζῃ; also with εστι, as εστιν εμοι.

3, of the third person singular in ε, as-ετυπτεν εμε.

4, of the numerals, as εικοσιν ανδρες; but not always; therefore we find also εικοσι ανδρες.

Regard to euphony also led the Greeks to drop the σ in the adverb ουτως before a word beginning with a consonant; thus, ὁυτως εποιησεν; but ὁυτω ποιω.

Thus the preposition εκ, as in εκ της ειρηνης, becomes εξ before a vowel, as εξ ειρηνης.

The same practice obtains in the negative ουκ, (not, no), as ουκ αισχρος, ου καλος; also, ουχ ἡδυς in the last example the aspirate in ἡδυς requires the aspirated form of κ, that is χ immediately before it, for in Greek only letters of the same kind go together, that is, a soft sound with a soft sound, a hard with a hard, and an aspirated sound with an aspirated sound. But of this matter I shall have to say more by-and-by.

The points employed in punctuating Greek are few; by the original writers points were not at all used. The comma, the period, and the note of exclamation are employed as in English. What with us is called the semicolon is used in Greek as a note of interrogation; and the colon is one dot placed at the top of the word, thus

Colon · Ει ελεξας·
Period . παντες γας ὡμολογησεν.
Interrogation ; τις ταυτα εποιησεν;

Before I proceed to treat of nouns I must say a few words respecting the verb, inasmuch as without some knowledge of the verb you will be unable to form sentences, as I intend you should from your earliest acquaintance with the Greek Grammar. Parts of the verb ειναι, *to be*, are indispensable. I here put down such as you will want, together with the corresponding English, or what is commonly called "the meaning."

Parts of the verb ειναι, to be;

ειμι, I am.	εις or ει, thou art.	ισθι, be thou.
εστι, he, she, or it is.	ην, he, she, it, was.	εστω, let him be.
εισι, they are.	ησαν, they were.	εστε, be ye.

Observe that εστι and εισι become εστιν and εισιν before a word beginning with a vowel.

Observe also that the Greek εστι, is the Latin *est*, and the English *is*.

In the Greek language verbs have three voices, whereas in Latin and in English verbs have only two. If in English I say *I strike*, I express myself in what is called "the active voice;" but if I say *I am struck*, I express myself in what is called "the passive voice." These two voices exist in Greek thus—

Active.	*Passive.*
τυπτω, I strike.	τυπτομαι, I am struck.

Here you observe that the passive is made by adding to the root τυπτ the letters ομαι, instead of the letter ω, by which the first person singular of the active is formed.

The Greeks have a third voice. In the present tense this voice is not distinguished in form from the passive; being the same word τυπτομαι. In signification, however, the third voice differs from the active and the passive. This third voice, under the name of *the middle voice*, denotes a reflex action, that is, an action which turns back on the agent or actor, as τυπτομαι, *I beat myself*.

Commit thoroughly to memory this table of βουλευω, *I advise* which contains such parts of the verb as you are likely to want in learning to form the nouns, the adjectives, &c.

INDICATIVE MOOD.

	Present Active.	*Present Passive.*
Sing. 1.	βουλευω, I advise.	βουλευομαι, I am
2.	βουλευεις, thou advisest.	βουλευῃ, thou art
3.	βουλευει, he advises.	βουλευεται, he is
Plur. 1.	βουλευομεν, we advise.	βουλευομεθα, we are
2.	βουλευετε, you advise.	βουλευεσθε, you are
3.	βουλευουσι (ν) they advise.	βουλευονται, they are

advised.

IMPERATIVE MOOD.

2. βουλευε, advise thou.	βουλευου, be thou
2. βουλευετε, advise ye.	βουλευεσθε, be ye

INFINITIVE MOOD.

βουλευειν, to advise.	βουλευεσθαι, to be

The middle signification is sometimes best rendered by another word; thus, instead of saying, *I advise myself*, we may say, *I consult*, or *I take advice*.

Observe how these several changes in the terminations are produced. The stem, or permanent form of the word, is βουλευ. To βουλευ, the endings, ω, εις, ει, ομεν, ετε, ουσι, are added, according to the person and number you may wish to form. Thus, to form the infinitive active, corresponding with our English *to advise*, you add, ειν to βουλευ, and so produce βουλευειν. If you wish to put into Greek, our *advise thou*, you add ε to βουλευ, and so produce βουλευε, the second person singular of the imperative mood. You proceed in the same way with any other verb. In order to make the matter clear, I put the endings here apart from any verb:

PERSON ENDINGS.

Indicative Mood.

	Present Active.	*Present Passive.*
	English Sign.	
Sing. 1.	ω — I	ομαι.
2.	εις — thou	η
3.	ει — he	εται.
Plur. 1.	ομεν — we	ομεθα.
2.	ετε — you	εσθε.
3.	ουσι — they	ονται.

Imperative Mood.

Sing.	ε	thou	ου.
Plur.	ετε	ye	εσθε.

Infinitive Mood.

ειν	to	εσθαι.

Vocabulary for the Exercises.

Αληθευω, I am true, I speak the truth.
Αριστευω, I am the best, I excel.
Βιοτευω, I live.
Βλακευω, I am idle, luxurious.
Γραφω, I write.
Διωκω, I pursue, strive.
Εσθιω, I eat, consume.
Εχω, I have; εχει, *with an adverb*, it is; as ευ εχει, it is well.
Θαυμαζω, I admire.
Κολακευω, I flatter.
Παιδευω, I educate.
Ψεγω, I blame.
Παιζω, I play.
Πινω, I drink.
Πιστευω, I believe.
Σπευδω, I hasten, strive after.
Φευγω, I flee, (*Latin* fugio).
Επομαι, I follow (*middle voice*).
Μαχομαι (*with dative*), I fight (*middle voice*).
Οδυρομαι, I complain, bewail.
Ανδρειως, bravely.
Ἡδεως, sweetly, pleasantly.
Καλως, well, beautifully.
Κακως, badly, ill.
Μετριως, moderately.
Αγαν, too much.
Αει, always (*English* aye).
Ου (*before consonants*, ουκ or ουχ *before vowels*), not, no.
Μη, (*with imperative*, *Latin* ne), not, do not.
Και, and.
Ει, if.

Exercises:—Greek-English.

Αει αληθευε. Χαιρετε. Επου. Μη οδυρεσθε. Ἡδεως βιοτευω. Καλως παιδευομαι. Καλως γραφεις. Ει κακως γραφεις, ψεγη. Σπευδει. Ανδρειως μαχεται. Ει κολακευετε, ουκ αληθευετε. Ει κολακευεις, ου πιστευη. Φευγομεν. Ει φευγομεν, διωκομεθα. Κακως φευγετε. Ει βλακευτε, ψεγεσθε. Ει ανδρειως μαχεσθε, θαυμαζεσθε. Ει κολακευουσιν, ουκ αληθευουσιν. Ου καλως εχει φευγειν. Καλως εχει ανδρειως μαχεσθαι. Ει διωκη, μη φευγε. Ανδρειως μαχου. Ει βλακευουσι, ψεγονται. Ει αληθευεις, πιστευη. Αει αριστευετε. Μετριως εσθιε και πινε και παιζε.

English-Greek.

I am true; thou art true; he is true; we are true; you are true; they are true; if I speak the truth, I am believed; do not fight; they fight; follow ye; thou followest; ye follow; he plays; they fly; if they flee, they are pursued; I am admired; they are admired; if they are idle, they are not admired; it is well to fight bravely; eat and drink moderately; they do not hasten; if thou flatterest, thou art not admired; he writes well; they write badly; it is well to be always the best; you live moderately; they eat too much.

I will now give you some directions as to these exercises. First, then, you must repeat each word in the vocabulary until you have impressed it indelibly on your memory. Then proceed, with the aid thus gained, to translate the Greek sentences into English, and put the English words into their corresponding Greek words, paying due regard to the model or pattern given you here and in other cases. In translating from the one language into the other, you may derive aid from consulting the Greek and the English as given in the exercises; that is, if you are translating from Greek into English, consult the exercise given in English, finding the example most like the one you have to translate; and if you are translating from English into Greek, then in the same way consult the exercise given in Greek. Be not in haste to advance; but be very careful to do everything thoroughly; make every first step sure before you attempt to take a second step. Bear in mind the Latin proverb "festina lente," *hasten slowly*; in English, "slow and steady wins the race." Do not be content with writing an exercise once, write it again and again; and when you think you have made it quite correct, then commit it to memory.

The Greek is a language in which compounds are readily and copiously found. The Greek may, in consequence, be acquired with comparative ease, provided the student is trained in the formation of its compounds. The necessary instructions I shall endeavour to impart. With this view I shall supply lists of words etymologically connected with those which are given in the vocabulary. A knowledge of one word will thus become to the learner a knowledge of several. Let us take, as an instance, the verb βουλευω, the present tense of which stands above. Βουλευω, *I advise*, comes from βουλη, *advice* or counsel; βουλη leads to βουλεια, *the dignity or office of a counsellor*; thence we derive βουλειον, *a council-house*; βουλευμα, *a determination*; βουλευτης, *a counsellor*; βουλευγορεω, *to speak in a council*; besides other terms. These words are again modified in meaning, as well as multiplied by means of prepositions; e. g., in combination with *ουν with*, βουλη forms another set of terms, as συμβουλευμα, *a resolution*; συμβουλευσις, *the communication of a resolution*; συμβουλευτης, *a joint counsellor*; συμβουλευω, *I give counsel*; συμβουλος, a senator. It would be easy to extend this list. But without going further, here are eleven words connected in origin, form and meaning with one word. When, then, you know that one, you have a key to all the rest. With a few roots, you thus see, you would soon become master of a copious vocabulary; and, as the roots of the language are not numerous, the acquisition of it, when rightly studied, is by no means a very difficult task.

N.B.—The roots will be printed in CAPITALS. Let the "Etymological Vocabulary," no less than the "Vocabulary for the Exercises," be thoroughly committed to memory.

Etymological Vocabulary.

ΑΛΗΘΗΣ, true.
Αληθευω, I am true.
Αληθεια, truth.
Αληθευσις, truthfulness.
Αληθινολογια, truth-speaking.
Αληθινος, true, genuine.
Αληθομαντις, a true soothsayer.

ΑΡΙΣΤΟΣ, best.
Αριστευω, I am best *or* first.
Αριστοκρατεια, government of the best, aristocracy.
Αριστομαντις, the best soothsayer.
Αριστοπονος, an excellent labourer.
Αριστοτεχνης, an excellent artist.
Αριστοφυης, of the best nature.

ΒΙΟΣ, life.
Βιοτευω, I live.
Βιοσσοος, life-saving.
Βιοτεια, the art of life.
Βιοφθορια, a destruction of life.
Βιοω, I am alive.
Βιωτικος, serviceable to life.

ΓΡΑΦΩ, I engrave, write.
Γραφη, a writing.
Γραφειον, a writing tool.
Γραφευς, a writer.
Γραφικος, pertaining to writing.
Γραμμα, a written letter.
Γραμματεια, the art of writing.

In the word Αληθινολογια, *truth-speaking*, there are two compounds, namely, Αληθινος from Αληθης, and λογος: λογος means speech, a word. Αληθινολογια is then a compound word, resembling in form as well as import this term which we coin for the purpose of illustration, namely, *truth-speaking*. Take another instance from our own language. Aristocracy is made up of *αριστος*, *best*, and κρατεια, *power* or *government*,

and so signifies, not *best government*, but *the government of the best.*

You cannot obtain all the information contained in the "Etymological Vocabulary," until you know the second word which enters into combination with each separate root. I shall, therefore, supply these second terms, together with their significations.

SECONDARY COMPONENTS.

Μαντις, a diviner, a foreteller; λογος, speech; κρατος, strength; πονος, labour; τεχνη, art; φυω, I come into existence; φθορα, destruction.

N.B. Observe that the pronoun is implied in the verb, and consequently you do not need a separate pronoun in translating. Thus γραφω is I write; involving the pronoun *I*, as well as the verb *write*. So γραφει is *he* writes, and γραφομεν is *we* write.

LESSONS IN ARITHMETIC—No. XXVIII.

(*Continued from page* 220.)

AVOIRDUPOIS WEIGHT.

IN this weight, the ounce weighs 437½ troy grains, and the dram 27 11/32 troy grains. The following is an old division of this weight, called

Wool Weight.

7 pounds	make	1 Clove
2 Cloves, or 14 pounds	,,	1 Stone, as before
2 Stones, or 28 pounds	,,	1 Tod, or quarter cwt.
6½ Tods, or 182 pounds	,,	1 Wey, or 1 cwt. 2 qrs. 14 lbs.
2 Weys, or 364 pounds	,,	1 Sack, or 3 cwt. 1 qr.
12 Sacks, or 4368 pounds	,,	1 Last, or 39 cwt.

A pack of wool weighs 240 pounds. A truss of straw weighs 36 pounds; a truss of old hay 56 pounds, and of new, 60 pounds; a load, 36 trusses.

LONG MEASURE.

Long Measure is used in measuring distances where *length* only is considered, without regard to breadth or depth. It is frequently called *linear* or *lineal* measure. The *standard Unit* of *Length* is the *yard* of 3 feet or 36 inches, called the British Imperial Yard. The multiples and submultiples of this standard are used both for itinerary and mercantile purposes.

Itinerary Measure.

12 Inches (in.)	make	1 Foot	marked ft.
3 Feet	,,	1 Yard	,, yd.
5½ Yards, or 16½ feet	,,	1 Rod, perch, or pole	r. or p.
40 Rods, or 220 yards	,,	1 Furlong	,, fur.
8 Furlongs, or 320 rods	,,	1 Mile	,, m.
3 Miles	,,	1 League	,, l.
60 Geographical miles, or 69½ Common miles	,,	1 Degree of a great circle	,, deg. or°
360 degrees	,,	1 Great circle of the globe	,, O

Other measures in common are the following:—4 inches make 1 hand; 9 inches, 1 span; 18 inches, 1 cubit; 6 feet, 1 fathom. In measuring roads and land, surveyors use a chain which is four rods long, and which is divided into 100 links. Hence, 25 links make 1 rod, and $7\frac{92}{100}$ inches make 1 link. This chain is commonly called *Gunter's Chain*, from the name of its inventor.

The inch is commonly divided either into *eighths* or *tenths*; sometimes, however, it is divided into *twelfths*, which are called *lines*.

The terms *rod*, *pole*, and *perch*, from the French *perche* signifying a rod, are names of the instrument which was originally used as a measure of this length.

Cloth Measure.

The imperial yard is used in measuring cloth, lace, and all kinds of cotton, woollen, flaxen, and silken goods.

2¼ Inches (in.)	make	1 Nail	marked n.
4 Nails, or 9 in.	,,	1 Quarter of a yard	,, qr.
4 Quarters, or 36 in.	,,	1 Yard	,, yd.

The following are a few old measures sometimes used:—37 inches make 1 Scotch ell; 3 quarters, or ¾ yard, 1 Flemish ell 5 quarters, or 1¼ yard, 1 English ell; 6 quarters, or 1½ yard 1 French ell.

SQUARE MEASURE.

Square Measure is used in measuring surfaces, whose *length* and *breadth* are considered without regard to height or depth; as, land, flooring, plastering, &c.

144 Square inches (sq. in.)	make	1 Square foot	marked sq. ft.
9 Square feet	,,	1 Square yard	,, sq. yd.
30¼ Square yards, or 272¼ Square feet	,,	1 Sq. perch, or pole	sq. p.
40 Square perches	,,	1 Rood	,, ro.
4 Roods	,,	1 Acre	,, ac.
640 Acres	,,	1 Square mile	,, sq. m.

The unit of land measure is the imperial acre, which contains by law 4840 square yards, or 10 square chains. Also 16 square perches make 1 square chain; 10 square chains, or 100,000 square links, make an acre. Flooring, roofing, plastering, &c., are frequently estimated by a "square" of 100 square feet. A *hide* of land, which is spoken of by ancient writers, is 100 acres.

CUBIC MEASURE.

Cubic Measure is used in measuring solid bodies, in which *length*, *breadth* and *thickness* are considered; such as timber, stone, boxes of goods, the capacity of rooms, ships, &c.

1728 Cubic inches (cu. in.)	make	1 Cubic foot	marked cu. ft.
27 Cubic feet	,,	1 Cubic yard	,, cu. yd.

The following old measures are sometimes used:—40 feet of round, or 50 feet of hewn timber, make 1 ton or load; 42 cubic feet, 1 ton of Shipping.

LIQUID MEASURE.

The standard of *Liquid Measure* is the imperial gallon, which contains 10 pounds avoirdupois of distilled water, at 62° Fahrenheit's thermometer; it is used in measuring wine, spirits, molasses, oil, beer, ale, milk, and all other liquids in general.

4 Quarterns	make	1 Pint,	marked pt.
2 Pints	,,	1 Quart	,, qt.
4 Quarts	,,	1 Gallon	,, gal.

The following are some old measures still in use:—31½ gallons make one barrel; 42 gallons, 1 tierce; 63 gallons, or 2 barrels, 1 hogshead; 2 hogsheads, 1 pipe or butt; 2 pipes, 1 tun: also 10 gallons make 1 anker; 18 gallons, 1 runlet; 2 tierces, or 84 gallons, 1 puncheon. In old beer measure, 9 gallons make 1 firkin; 2 firkins, 1 kilderkin; 2 kilderkins, 1 barrel.

The old wine gallon, in general use about 26 years ago, contained 231 cubic inches. The old beer gallon contained 282 cubic inches.

DRY MEASURE.

The standard of *Dry Measure* is the imperial bushel, which contains 80 pounds avoirdupois, or 8 gallons of distilled water, at 62° Fahrenheit's thermometer. It is used in measuring grain, fruit, &c.

2 Pints (pt.)	make	1 Quart,	marked qt.
4 Quarts, or 8 pints	,,	1 Gallon	,, gal.
2 Gallons	,,	1 Peck	,, pk.
4 Pecks, or 8 gallons	,,	1 Bushel	,, bu.
8 Bushels	,,	1 Quarter	,, qr.

The following are some old measures sometimes used, viz., 2 quarts make 1 pottle; 2 bushels, 1 strike; 2 strikes, or 4 bushels, 1 coom; 2 cooms, or 8 bushels, 1 quarter; 5 quarters, 1 wey or load; 2 loads, 1 last. The old standard dry measure was the Winchester bushel, an upright cylinder, 18½ inches in diameter, and 8 inches deep, and containing 2150·4 cubic inches. The *standard or imperial bushel* contains 2218·192 cubic inches.

TIME MEASURE.

Time is naturally divided into *days* and *years*; the former are caused by the revolution of the earth on its axis, the latter by its revolution round the sun.

SCOTLAND.

BOUNDARIES.

NORTH: N. Atlantic Ocean.
SOUTH: England & Irish Sea.
EAST: German Ocean.
WEST: N. Atlantic Ocean.

DIVISIONS.

SOUTH LOWLANDS.

Agricultural Counties.

Counties.	*Towns.*
Berwick or Merse	Dunse, Greenlaw.
Haddington, or East Lothian	Haddington.
Edinburgh, or Mid Lothian	Edinburgh.
Linlithgow, or West Lothian	Linlithgow.
Stirling	Falkirk, Stirling.

Pastoral Counties.

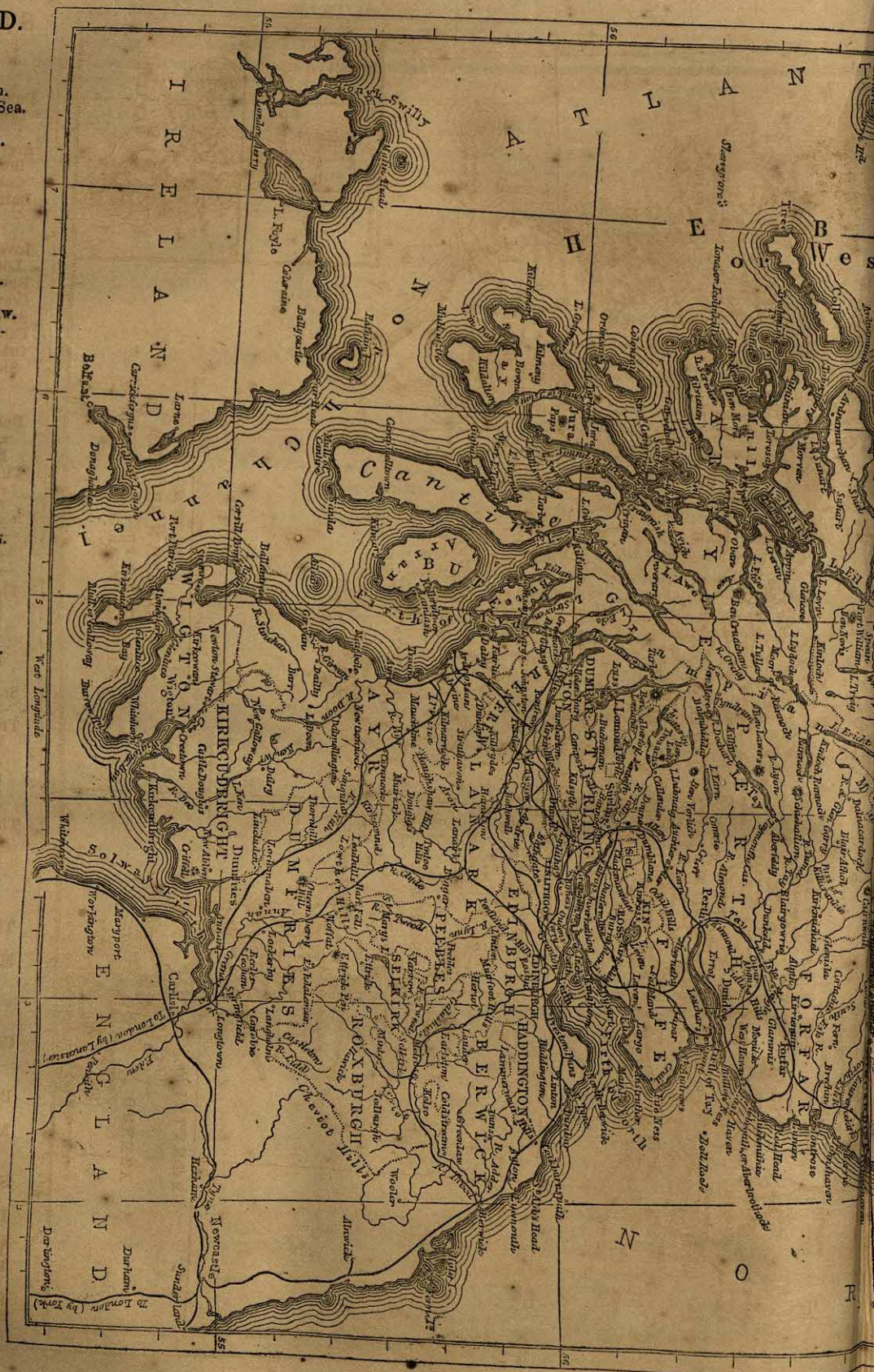
Roxburgh, or Eskdale, and Liddesdale	Hawick, Jedburgh.
Selkirk, or Ettrick Forest	Selkirk.
Peebles, or Tweeddale	Peebles.
Dumfries, or Nithsdale and Annandale	Dumfries.

Manufacturing Counties.

Ayr, or Carrick, Kyle, and Cunningham	Kilmarnock, Ayr.
Wigton, or East Galloway	Stranraer, Wigton.
Kirkcudbright, or West Galloway	Kirkcudbright.
Renfrew	Paisley, Renfrew.
Lanark, or Clydesdale	Glasgow, Lanark.

NORTH LOWLANDS.

Perth, or Gowrie, Strathearn, Monteith, Athol, and Breadalbane	Perth.
Fife	Dunfermline, Cupar.
Clackmannan	Clackmannan.
Kinross	Kinross.
Forfar, or Angus	Dundee, Forfar.
Kincardine, or Mearns	Stonehaven.
Aberdeen, or Strathbogie, Mar, & Buchan	Aberdeen.
Banff	Banff.
Moray, or Strathspey	Elgin.
Nairn	Nairn.



SCOTLAND.

WEST HIGHLANDS.

Dumbarton, or Lennox	Kirkintulloch, Dumbarton.
Argyle, or Cantire, Lorn, and Cowal	Campbellton, Inverary.
Bute and Arran	Rothsay.

NORTH HIGHLANDS.

Inverness, or Lochaber	Inverness.
Ross	Tain.
Cromarty	Cromarty.
Sutherland	Dornoch.
Caithness	Wick.
Orkney and Shetland	Lerwick, Kirkwall.

ISLANDS.

Bute, Arran, the Cumbraes, and Ailsa Craig, in the Frith of Clyde.

The Inner Hebrides, including Gigha, Islay, Jura, Mull, Colonsay, Oronsay, Staffa, Iona, Coll, Tiree, Muck, Eig, Rum, Canna, Skye, &c., lying on the Western Coast.

The Outer Hebrides, including Lewis and Harris, North Uist, South Uist, Benbecula, the Barra Group, &c., lying to the North-west of the Inner Hebrides.

St. Kilda, West of the Outer Hebrides.

The Orkney Islands, including Pomona, Hay, North Ronaldshay, South Ronaldshay, Westray, Rowsay, Stronsa, &c., lying to the North of Caithness.

The Shetland Islands, including Mainland, Yell, Unst, Fetlar, Whalsay, Bressay, Foula, &c., lying to the North of the Orkney Islands.

The Bell Rock, near the mouth of the Tay.

May, Inchkeith, the Bass Rock, &c., in the Frith of Forth.

PENINSULAS.

Cantire, in Argyleshire.

CAPES.

Burrow Head and Mull of Galloway, in Wigtonshire.

Mull of Cantire, and Point of Ardnamurchan, in Argyleshire.

Storr Head, and Cape Wrath, in Sutherlandshire.

Dunnett Head, and Duncan's bay Head, in Caithness.

Tarbet-ness, in Ross-shire.

Kinnaird's Head and Buchanness, in Aberdeenshire.

Fife-ness, in Fifeshire.

St. Abb's Head, in Berwickshire.

60 Seconds (sec.)	make	1 Minute	marked	min.
60 Minutes	,,	1 Hour	,,	h.
24 Hours	,,	1 Day	,,	d.
7 Days	,,	1 Week	,,	wk.
4 Weeks	,,	1 Common month		mo.
12 Calendar months, or 365 Days and 6 hours (nearly)	,,	1 Civil year	,,	yr.

The following are the names of the 12 calendar months into which the civil or legal year is divided, with the number of days in each.

January	written	(Jan.)	the first	month,	has	31	days.
February	,,	(Feb.)	,, second	,,	,,	28	,,
March	,,	(Mar.)	,, third	,,	,,	31	,,
April	,,	(Apr.)	,, fourth	,,	,,	30	,,
May	,,	(May)	,, fifth	,,	,,	31	,,
June	,,	(June)	,, sixth	,,	,,	30	,,
July	,,	(July)	,, seventh	,,	,,	31	,,
August	,,	(Aug.)	,, eight	,,	,,	31	,,
September	,,	(Sep.)	,, ninth	,,	,,	30	,,
October	,,	(Oct.)	,, tenth	,,	,,	31	,,
November	,,	(Nov.)	,, eleventh	,,	,,	30	,,
December	,,	(Dec.)	,, twelfth	,,	,,	31	,,

The number of days in each month may be easily remembered by committing to memory the following lines:—

"Thirty days hath September,
April, June, and November;
February twenty-eight alone,
All the rest have thirty-one;
But Leap year, comes one year in four,
And February then has one day more."

A *Solar* year is the exact time in which the earth revolves round the sun, and contains 365 days, 5 hours, 48 minutes, and 48 seconds. Since the civil year contains 365 days, and 6 hours (nearly), it is plain that in four years a whole day will be gained, and therefore every fourth year must have 366 days. This day was originally added to the year, by *repeating* the *sixth* of the *Calends of March* in the Roman calendar, which corresponds with the 24th of *February* in ours. It was called the *intercalary* day, from the Latin *intercalo*, to *insert*. The year in which this day is added is called *Bissextile*, from the Latin *bis*, *twice*, and *sextilis*, the *sixth*. It is also called "*Leap Year*," because it leaps over a day more than the common year. The *civil* or *legal* year is often called the *Julian* year, from Julius Cæsar, who adapted the *calendar* or *register* of the *civil* year to the *supposed* length of the *solar* year, by adding 1 day to every *fourth* year.

CIRCULAR MEASURE.

Circular Measure is applied to the divisions of the circle, and is used in reckoning *latitude* and *longitude*, and the *motion* of the heavenly bodies.

60 Seconds (″)	make	1 Minute,	marked	′
60 Minutes	,,	1 Degree	,,	°
30 Degrees	,,	1 Sign	,,	s.
12 Signs, or 360°	,,	1 Circle	,,	c.

This measure is often called *Angular Measure*, and is chiefly used by astronomers, navigators, and surveyors.

The circumference of every circle is divided, or supposed to be divided, into 360 equal parts, called *degrees*. Since a degree is $\frac{1}{360}$ part of the circumference of a circle, it is obvious that its length must depend on the size of the circle. The division of the circumference of the circle into 360 equal parts took its origin from the length of the year, which (in round numbers) was supposed to contain 360 days, or 12 months of 30 days each. The 12 *signs* correspond to the 12 months. The term *minutes*, is from the Latin *minutum*, which signifies a small part. The term *seconds* is an abbreviated expression for *second* minutes, or minutes of the *second* order.

MISCELLANEOUS TABLE.

The following denominations, not included in the preceding tables, are frequently used.

12 Units	make	1 Dozen (doz.)
12 Dozen, or 144	,,	1 Gross
12 Gross, or 1728	,,	1 Great gross
20 Units	,,	1 Score
5 Score	,,	1 Hundred
24 Sheets of paper	,,	1 Quire
20 Quires	,,	1 Ream
2 Reams	,,	1 Bundle
5 Bundles	,,	1 Bale

A sheet folded in two leaves	forms	a folio
A sheet ,, four leaves	,,	a quarto, or 4to.
A sheet ,, eight leaves	,,	an octavo, or 8vo.
A sheet ,, twelve leaves	,,	a duodecimo, or 12mo.
A sheet ,, eighteen leaves	,,	an 18mo.
A sheet ,, thirty-six leaves	,,	a 36mo.

LESSONS IN GERMAN.—No. LX.

§61. Demonstrative Pronouns.

(1) The peculiar office of a demonstrative pronoun is to point out the relative *position* of the object to which it refers. Of these there are three, namely,

dieſer, this (pointing to something *near at hand*);
jener, that (indicating something *remote*);
der, this or that (referring to things in either position).

(2) Dieſer and jener are declined after the Old form of adjectives: thus,

	Singular.			*Plural.*
	Masc.	*Fem.*	*Neut.*	*For all genders.*
N.	dieſer,	dieſe,	dieſes (dies), this,	dieſe, these.
G.	dieſes,	dieſer,	dieſes, of this;	dieſer, of these.
D.	dieſem,	dieſer,	dieſem, to this;	dieſen, to these.
A.	dieſen,	dieſe,	dieſes (dies), this;	dieſe, these.

(3) Der, when used in connection with a noun, is inflected (like the definite article) thus:

	Singular			*Plural.*
	Masc.	*Fem.*	*Neut.*	*For all genders:*
N.	der,	die,	das, this or that;	die, these or those.
G.	des,	der,	des, of this or that;	der, of these or those.
D.	dem,	der,	dem, to this or that;	den, to these or those.
A.	den,	die,	das, this or that;	die, these or those.

(4) When used absolutely, that is, to represent a substantive, it is inflected thus:

	Singular.			*Plural.*
	Masc.	*Fem.*	*Neut.*	*For all genders.*
N.	der,	die,	das;	die.
G.	deſſen (deß),	deren (der)	deſſen (deß);	deren.
D.	dem,	der,	dem;	denen.
A.	den,	die,	das;	die.

§ 62. Observations on the demonstratives.

(1) The neuters dieſes (contract form dies), jenes and das, are, like es, (§ 134. 1.) employed with verbs, without distinction of gender or number: thus, dies iſt ein Mann, this is a man; dies ſind Menſchen, these are men; jenes iſt eine Frau, that is a woman; &c.

(2) Dieſer, when denoting immediate proximity, signifies "*this*;" as, in dieſer Welt iſt alles vergänglich, in this world all is transitory. More generally, however, it answers in use to "*that*." Jener always denotes greater remoteness than dieſer, and signifies "*that*," "*yon*," "*yonder*;" as jener Stern iſt kaum ſichtbar, that (or yonder) star is hardly visible.

Jener and dieſer, when employed to express contrast or comparison, often find their equivalents in the English expressions "*the former*"—"*the latter*;" "that, that one"—this, this one."

(3) The demonstrative der, die, das, is distinguishable from the article, with which it is identical in form, by being uttered with greater emphasis, as in the following example: der Mann hat es geſagt, nicht jener, *this* man has said it, not that one.

(4) The form deß is chiefly found in compounds; as, deßwegen, on this account.

(5) Sometimes der is, for the sake of greater clearness, employed in place of a possessive: as, er malte ſeinen Vetter und deſſen Sohn, he painted his cousin and *his* son; *literally*, and the *son of this* one, i.e. the cousin's son.

(6) The pronouns, both demonstrative and determinative,

are frequently made more *intensive* by the particle eben, *even*; *very*: eben dieſe Blume, this *very* flower; eben das Kind, that *same* child: eben derſelbe, the *very* same.

§ 63. Determinative Pronouns.

(1) The pronouns of this class are commonly set down among the demonstratives. Their *distinctive* feature, however, is that of being used where an antecedent is to be limited by a relative clause succeeding, and so rendered more or less prominent or emphatic: thus, der, welcher klug handelt, verdient Lob, *he* (*that* man) who acts wisely, deserves praise. From this use, they derive the name *determinative*. They are

der, that; that one; *he;*
derjenige, that; that person (*strongly determinative*);
derſelbe,* the same (denoting *identity*);
ſelbiger, the same (seldom used);
ſolcher, such (marking *similarity* of kind or nature.)

(2) Der, when used in connection with a noun, is declined like the demonstrative der; that is, like the definite article: when used *absolutely*, it differs from the demonstrative der only in the genitive plural: taking derer instead of deren.

(3) Derjenige and derſelbe are compounded of der, and the parts jenige and ſelbe respectively. In declining, both parts of each must be inflected; der, like the article, and jenige and ſelber after the New form of adjectives: thus,

	Singular.			*Plural.*
	Masc.	*Fem.*	*Neut.*	*For all genders.*
N.	derjenige,	diejenige,	dasjenige,	diejenigen.
G.	desjenigen,	derjenigen,	desjenigen,	derjenigen.
D.	demjenigen,	derjenigen,	demjenigen,	denjenigen.
A.	denjenigen,	diejenige,	dasjenige,	diejenigen.

(4) Selbiger, Selbige, Selbiges and Solcher, Solche, Solches, are declined after the Old form of adjectives; the latter, however, when the indefinite article (ein, eine, ein) precedes, takes the *Mixed* form: thus,

	Masc.	*Fem.*	*Neut.*	
N.	ein ſolcher,	eine ſolche,	ein ſolches,	such a.
G.	eines ſolchen,	einer ſolchen,	eines ſolchen,	of such a.
D.	einem ſolchen,	einer ſolchen,	einem ſolchen,	to such a.
A	einen ſolchen,	eine ſolche,	ein ſolches,	such a.

When ein comes *after* ſolcher, the latter is not inflected at all; as, ſolch ein Mann, such a man.

Nearly synonymous with Solcher are the words, desgleichen, dergleichen, ſeinesgleichen, ihresgleichen, all which are indeclinable; as, ich habe keinen Umgang mit dergleichen Leuten, I have no intercourse with such people. Wer unter euch iſt ſeinesgleichen? Who among you is his equal?

§ 64. Relative Pronouns.

(1) The proper office of a relative pronoun is to represent an antecedent word or phrase; but, while so doing, it serves also to connect the different clauses of a sentence. The Relatives in German are these:

Welcher,	who, or which.
Der,	that.
Wer	who, he who, she who, or that.
So,	which.

The latter word is nearly obsolete; it is indeclinable, being an adverb used as a relative.

(2) Welcher, *who* or *which* is declined after the Old form; thus,

	Singular.			*Plural.*
	Masc.	*Fem.*	*Neut.*	*For all genders.*
N	welcher,	welche,	welches;	welche, who, which.
G.	welches,	welcher,	welches;	welcher, of whom, whose.
D.	welchem,	welcher,	welchem;	welchem, to whom, to which.
A.	welchen,	welche,	welches;	welche, whom, which.

(3) Der, *that*, is declined thus:

	Singular.			*Plural.*
	Masc.	*Fem.*	*Neut.*	*For all genders.*
N.	der,	die,	das;	die, that, who, which.
G.	deſſen,	deren,	deſſen;	deren, of whom, or which, whose.
D.	dem,	der,	dem;	denen, to whom, or which.
A.	den,	die,	das;	die, that, who, which.

(4) Wer, *who*, *he who*, *she who*, or *that*, is declined: thus,

	Singular.		
	Masc.	*Fem.*	*Neut.*
N.	wer,	wer,	was, who, or he who.
G.	weſſen (or weß),	weſſen (or weß),	weß, whose, or of him who.
D.	wem,	wem,	to whom, or to him who
A.	wen,	wen,	was, whom, or him who.

Wer has no plural, but like „es," is sometimes used before plural verbs. Example: Wer ſind dieſe Leute? Who are this people? The Dative singular neuter is wanting, but is supplied by an adverbial compound; as, wozu, (wo×zu) *whereto* or *to which*. Womit, where-with, with what, wovon, whereof, of what, &c.

§ 65. Observations on the Relatives.

(1) Of the pronouns declined above, welcher, welche, welches, is the only one that can be used in conjunction with a noun, after the manner of an adjective: thus, welcher Mann, which man (not wer Mann;) and, except when so joined with a noun, the genitive (both singular and plural) of welcher is never used, but, in place of it, the corresponding parts of der; that is deſſen, deren, deſſen, for the singular, and deren, for the plural; as, der Mann, deſſen (not welches) Freund ich bin, the man, whose friend I am; die Bäume, deren (not welcher) Blüthen abgefallen ſind, the trees whose blossoms have fallen off.

(2) Der, die, das, as a relative, like the English word *that*, is used as a sort of substitute for the regular relative. Thus its genitive is employed in place of that of welcher, because the genitive of the latter (welches, welcher, welches) being the same in form as the nominative masculine and neuter, might occasion mistake. So after the pronouns of the first and second person, (and of *the third, when used for the second*) welcher is never employed, but der, thus:

Ich,	der ich	ihn ſah,	I, who saw him.
Du,	der du	uns ſegneſt,	thou, who blessest us.
Wir.	die wir	hier verſammelt ſind	we, who are here, assembled.
Ihr,	die ihr	euer Vaterland liebt,	ye, who love your country.
Sie,	die Sie	mir beiſtimmten,	ye, who agreed with me.

In each case here, the personal pronoun is *repeated* after the relative. In translating, of course, the pronoun repeated is to be omitted; or the order of the words being reversed (ich der, instead of der ich) the rendering may be: I, who saw, &c. It must be added, that, when the pronoun is not repeated, the verb will be in the *third* person and in agreement with the relative: as, du warſt es, der es mir ſagte, thou wast the one, that told me so.

Der, die, das, after ſolcher, is equivalent to the English "*as*:" thus, ſolche, die an Bäumen wächſt, such as grows on trees.

(3) Wer, was, is an indefinite relative employed wherever any uncertainty exists about the antecedent: thus, können Sie mir ſagen, wer dieſes gethan hat? Can you tell me *who* has done this? Ich weiß nicht, was er ſagte, I do not know *what* he said.

(4) Often, wer, was, has at once the force of both a relative and an antecedent; as, wer auf dem Wege der Tugend wandelt, iſt glücklich, *he that* walks in the path of virtue, is happy; was gerecht iſt, verdient Lob, *what*, or *that which* is right, deserves praise.

(5) Wer always begins a clause or sentence, and never comes *after* the word which it represents; was may, or may *not* begin a clause, and may or may *not* come after its proper *antecedent*: thus, wer nicht hören will, der muß fühlen, he who will not hear, must feel; ich ſage, was ich weiß, I say what I know; alles, was ich geſehen habe, all that I have seen; was gerecht iſt, verdient Lob, what is right, deserves praise.

The form weß occurs in the compounds weßwegen, weßhalb, on which, or what account.

(6) Welcher, -e, -es, is often employed as an indefinite adjective pronoun. See Lesson 36. I.

* Where two words precede, either of which *might* be taken for the antecedent of a personal pronoun of the third person, derſelbe is used to prevent doubt; thus: der Vater, ſchrieb ſeinem Sohne, derſelbe müſſe nach London reiſen, the father wrote the son, that *he* (derſelbe, the *last* one named, (i.e. the son) must set out for London

LESSONS IN GERMAN PRONUNCIATION.—No. VII.

Das Angebinde.

Dåss ån″-gai-bin′-dai.

Als nun der Geburtstag, des Vaters herbei-
ålss noon dair gai-boorts′-tåhch dess fåh′-ters herr-by′-
kam, da sammelten die drei jüngsten Kinder Blu-
kåhm, dåh zåm′-mel-ten dee dry yünk′-sten kin′-der bloo′-
men, die allerschönsten und ganz heimlich, und flech-
men, dee ål′-ler-shö′n′-sten öönt gånts hime′-lich, öönt flöch′-
ten sie, daß es der Vater nicht sah, zum schönen
ten zee, dåss ess dair fåh′-ter nicht zåh, tsöom shö′-nen
Kranze und konnten die ganze Nacht kein Auge zu-
krånt′-sai öönt kon′-ten dee gånt′-se nåcht kine ou′-gai tsoo′
thun.
toon.

Als der Tag erwachte, gingen sie alle drei in
ålss dair tåhch err-våch′-tai, ghin′-ghen zee ål′-lai dry in
das Kämmerlein mit bloßen Füßchen daß es der
dåss kem′-mer-line mit blo′-ssen fü′ss′-chen, dåss ess dair
Vater nicht höre, und trugen den Blumenkranz
fåh′-ter nicht hö′-rai, öönt troo′-ghen dain bloo′-men-krånts
alle drei, und legten ihn auf des Vaters Bett ganz
ål′-lai dry, öönt laich′-ten een ouf dess fåh′-ters bet gånts
leise, daß es der Vater nicht merke. Der Vater
li′-zai, dåss ess dair fåh′-ter nicht meer′-kai. Dair fåh′-ter
merkt es wohl, aber er that, als ob er schliefe.
merrk′-tai ess vole, åh′-ber air tåht, ålss op air shlee′-fai,

Und als es nun Morgen war, da kam der Vater
öönt ålss ess noon morg′-en vår, dåh kåhm dair fåh′-ter
und hatte den schönen Blumenkranz und sagte:
öönt hå′t-tai dain shö′-nen bloo′-men-krånts öönt zåhch′-tai:
Wo sind die Engelein, die mich bekränzet haben
Vo zint dee en′-ghai-line, dee mich bai-kren′-tset håh′-ben
in der Nacht, da ich schlief! Und die Kinder kamen
in dair nåcht, dåh ich shleef! öönt dee kin′-der kåh′-men
und hingen an ihm, küßten den Vater und waren
öönt hing′-en ån em, küss′-ten dain fåh′-ter öönt vår′-ren
voll Freude.
foll froi′-dai.

Da kam ein Mann, ein Bote, der brachte ein feines
Dåh kåhm ine mån, ine bo′-tai, dair bråch′-tai ine fi′-ness
rundes Fäßlein mit Reifen; darinnen war schöner
röön′-dess face′-line mit ri′-fen; dåh-rin′-nen vår shö′-ner
Wein von Hochheim, das Herz des Vaters zu er-
vine fon Ho′ch′-hime, dåss herrts dess fåh′-ters tsoo err-
freuen. Da war der Vater erfreuet, als er sah,
froi′-en. Dåh vår dair fåh′-ter err-froi′-et, ålss air zåh,
daß der älteste Sohn es gesendet, und die Kinder
dåss dair el′-tai-stai zone ess gai-zen′-det, öönt dee kin′-der
tanzten um den Vater und das Fäßlein.
tånts′-ten öom dain fåh′-ter öönt dåss face′-line.

Darnach trat der Vater an den Tisch und fand ein
Dåhr′-nåch tråht dair fåh′-ter ån dain tish öönt fånt ine
fein großes Blatt, darauf war ein schöner und frommer
fine gro′-cess blåt, dåh′-rouf vår ine shö′-ner öönt from′-mer
Gesang von dem zweiten Sohne, der aus der Fremde
gai-zånk′ fon dem tswi′-ten zo′-nai, dair ouss dair frem′-dai
heimkommen war. Und als der Vater es las, da
hime′-kom-men vår. öönt ålss dair fåh′-ter ess låhss, dåh
lächelte er und die Thränen fielen auf das Blatt.—
lech′-chel-tai air öönt dee trai′-nen fee′-len ouf dåss blåt.—
Da sahen die drei Kleinen den Vater an und sag-
Dåh zåh′-en dee dry kli′-nen dain fåh′-ter ån öönt zåhch′-
ten: Lieber Vater, nicht wahr? wir können noch nichts
ten: Lee′-ber fåh′-ter, nicht vår? veer kön′-nen nöch nichts
geben und nichts fertigen, wir sind noch so klein. Da
gai′-ben öönt nichts ferr′-tig-en, veer zint nöch zo kline! Dåh
nahm der Vater alle drei, das Mägdlein und die bei-
nåhm dair fåh′-ter ål′-lai dry, dåss maicht′-line öönt dee bi′-
den Buben, und drückte sie an sein Herz und sag-
den boo′-ben, öönt drück′-tai zee ån zine herrts öönt zåhch′-
te: O gedenket nicht, daß eure Gabe geringer sei
tai: O gai-den′-ket nicht, dåss oi′-rai gåh′-bai gai-ring′-er zi
in meinen Augen. Klopfen doch eure kleinen Herz-
in mi′-nen ou′-gen. Klop′-fen döch oi′-rai kli′-nen herrts′-
lein so gut wie die andern und mein Vaterherz für
line zo goo′t vee dee ån′-dern öönt mine fåh″-ter-herrts′ für
euch alle.
oich ål′-lai.

VOCABULARY.

Angebinde, *n.* keepsake	Reif, *m.* hoop
anbinden, to bind, attach	Wein, wine
Geburt *f.* birth	Hochheim, *name of a place,* Hock
Blume, *f.* flower	tanzen, to dance
flechten, to twist, twine	Gesang, song, hymn
Kranz, *m.* wreath	Blatt, *n.* leaf, sheet of paper
zuthun, to shut, close	heim, home
erwachen, to awake	aus der Fremde, from abroad
wachen, to be awake, to watch	Fremde, *f.* foreign parts
bloß, bare, merely	lesen, to read
hören, to hear	wahr, true
tragen, to bear, carry	fertigen, to prepare, make
leise, softly	fertig, ready
Engel, *m.* angel	Bube, *m.* boy, lad, knave
bekränzen, to cover with wreaths	drücken, to press
küssen, to kiss	gedenken, to think, remember
Kuß, *m.* kiss	denken, to think
voll, full	Gabe, *f.* gift
Bote, *m.* messenger	gering, trifling.
Faß, *n.* cask, barrel	

LESSONS IN FRENCH.—No. LXX.

By Professor Louis Fasquelle, LL.D.

§ 63.—The Participle.

(1.) The participle is so called, because it participates of the nature both of the verb and of the adjective. It partakes of the nature of the verb, in having its signification and regimen, and of the nature of the adjective in relating, like the latter, to nouns and pronouns.

(2.) There are two sorts of participles; the present and the past.

§ 64.—The Participle Present.

(1.) The participle present, which denotes continuance of action, answers to the English participle in *ing*.

(2.) This participle is invariable; always terminating in *ant*; as, chantant, *singing*; finissant, *finishing*; recevant, *receiving*; vendant, *selling*.

une dame *marchant*,	*a lady walking*;
des hommes *marchant*,	*men walking*.

J'ai vu les vents *grondant* sur ces moissons superbes,
Déraciner les blés, se disputer les gerbes. Delille.

I have seen the winds roaring over those superb harvests, root up the grain, and contend for the sheaves.

§ 65.—Verbal Adjectives ending in ant.

(1.) The verbal adjective in *ant* expresses merely the con-

dition, the manner of being, the quality of the noun. It never denotes action.

(2.) This adjective varies in gender and number. We give below examples of the same words, used as participles and as adjectives.

Adjectives.	*Participles.*
Une femme *obligeante* est aimée de tout le monde.	Une femme *obligeant* tout le monde est généralement aimée.
An obliging woman is loved by every person.	*A woman obliging every body is generally loved.*
Les tribus *errantes* de l'Afrique.	Les tribus *errant* dans l'Afrique
The wandering tribes of Africa.	*The tribes wandering in Africa.*
Il n'y a que les natures *aimantes* qui soient propres à l'étude de la nature. BERNARDIN DE ST. PIERRE.	Les natures *aimant* la solitude aiment généralement l'étude.
Affectionate natures (dispositions) only are fit for the study of nature.	*Natures (dispositions) loving solitude are in general fond of study.*

§ 66.—The Participle Past.

(1.) The participle past denotes the completion of the action.

(2.) It is susceptible of variations for gender and number.

(3.) The participle past, used without an auxiliary, agrees in gender and number with the noun which it qualifies, whether the noun precedes or follows. In short, all that we have said of the agreement of the adjective with the noun may be applied to this participle.

des enfants *chéris*,	*beloved children*;
des femmes *estimées*,	*esteemed women*;
Comme une lampe d'or dans l'azur *suspendue*,	*Like a golden lamp suspended in the azure vault, the moon balances herself in the confines of the horizon; her weakened rays sleep on the turf.*
La lune se balance aux bords de l'horizon ;	
Ses rayons *affaiblis* dorment sur le gazon. LAMARTINE.	

(4.) For further rules on the participle past, see Syntax, § 134, and following.

§ 67.—The Adverb.

(1.) The adverb is an invariable word joined to verbs, adjectives, or to other adverbs, to modify their signification.

(2.) Adverbs are divided into seven classes :—

1. Of manner ;	doucement, *softly* ; sagement, *wisely* ; &c.
2. Of order ;	premièrement, *first* ; d'abord, *at first* ; ensuite, *afterwards* ; &c.
3. Of place ;	ici, *here* ; où, *where* ; là, *there* ; ailleurs, *elsewhere* ; &c.
4. Of time ;	hier, *yesterday* ; aujourd'hui, *to-day* ; demain, *to-morrow* ; &c.
5. Of quantity ;	peu, *little* ; trop, *too much* ; tant, *so much* ; &c.
6. Of comparison ;	plus, *more* ; moins, *less* ; très, *very*.
7. Of affirmation, negation, and doubt ;	oui, *yes* ; certes, *certainly* ; non, *no* ; nullement, *by no means* ; peut-être, *perhaps* ; ne, pas, point, *not* ; &c.

(3.) A few adjectives are sometimes used adverbially. They are then invariable :—

chanter *juste*,	*to sing in tune* ;
coûter *cher*,	*to cost dear* ;
parler *haut*,	*to speak loud.*

(4.) Several words united together, and having the force of an adverb, are called an adverbial phrase :—

tout-à-coup,	*suddenly* ;
peu à peu,	*by degrees* ;
tout-à-l'heure,	*immediately* ;
de temps en temps,	*now and then*, &c.

§ 68.—Formation of Adverbs from Adjectives.

(1.) Adverbs ending in *ment*, may be formed from adjectives in the following manner :—

(2.) When the adjective ends in the masculine with a vowel, *ment* is added to form the adverb :—

Adjective.		*Adverb.*	
utile,	*useful* ;	utilement,	*usefully*
poli,	*polite* ;	poliment,	*politely* ;
aisé,	*easy* ·	aisément,	*easily.*

(3.) *Exceptions.*

beau,	*beautiful* ;	bellement,	*beautifully* ;
fou,	*foolish* ;	follement,	*foolishly* ;
mou,	*soft* ;	mollement,	*softly* ;
nouveau,	*new* ;	nouvellement,	*newly* ;
traître,	*treacherous* ;	traîtreusement,	*treacherously.*

(4.) When the adjective ends in the masculine with a consonant, the syllable *ment* is added to its feminine termination : as,

masc.	*fem.*			
bon,	bonne,	*good* ;	bonnement,	*in a good manner* ;
doux,	douce,	*soft* ;	doucement,	*softly* ;
heureux,	heureuse,	*happy* ;	heureusement,	*happily.*

(5.) Adjectives ending in *nt*, change that termination into *mment* :—

prudent,	*prudent* ;	prudemment,	*prudently* ;
élégant,	*elegant* ;	élégamment,	*elegantly.*

Exceptions.

lent,	*slow* ;	lentement,	*slowly* ;
présent,	*present* ;	présentement,	*presently.*

(6). The following adverbs require an acute accent over the *e* preceding *ment*, which *e* is mute in the adjective :—

aveuglément,	*blindly* ;	expressément,	*expressly* ;
commodément,	*commodiously* ;	importunément,	*importunately* ;
communément,	*commonly* ;	incommodément,	*incommodiously* ;
conformément,	*conformably* ;	obscurément,	*obscurely* ;
confusément,	*confusedly* ;	opiniatrément,	*obstinately* ;
diffusément,	*diffusely* ;	précisément,	*precisely* ;
énormément,	*enormously* ;	profondément,	*profoundly.*

§ 69.—Degrees of Signification in Adverbs ending in ment.

(1.) Adverbs ending in *ment* are, like the adjectives from which they are formed, susceptible of three degrees of signification ; the positive, the comparative, and the superlative.

(2.) The first expresses the manner simply.

(3.) The second expresses it in a degree of equality, superiority, or inferiority, by adding to the adverb the words *si, so ;* aussi, *as ;* plus, *more ;* moins, *less.*

(4.) The third, by the addition of the words bien, très, fort, *very*, carries that signification to the highest degree.

§ 70.—Adverbs making of themselves a Comparison.

comme de même, pareillement,	*in the same manner* ;	ainsi, plus, davantage,	*thus* ; *more.*
de plus,	*besides* ;	à-peu-près,	*nearly* ;
moins,	*less* ;	pour le plus,	*for the most* ;
mieux,	*better* ;	tout au plus,	*at most* ;
pis,	*worse* ;	à qui mieux mieux,	*vying with one another.*
très,	*very* ;	à l'envi,	
ni plus ni moins,	*neither more nor less* ;	de mieux en mieux,	*better and better.*
presque, quasi,	*almost* ;		

§ 71.—The Preposition.

(1.) The preposition is an invariable word to express the relations of things.

(2.) The preposition, conveys by itself no distinct meaning. The preposition and the word which it governs, form what is called an indirect regimen.

§ 72.—SYNTAX.

(1.) Syntax treats of the agreement, government, and arrangement of words in sentences.

(2.) One word is said to agree with another, when it takes the same modification of gender, number, and person.

(3.) One word governs another, when by the influence of the former the latter is made to assume a particular form or place.

(4.) The proper arrangement of words consists in placing them in the order sanctioned by grammatical rules, deduced from the best reputable custom.

(5.) For the cases adopted by the modern French grammarians, the student is referred to § 2, and § 42, (2). (3). (4). (5).

§ 73.—The Noun.—Place of Nouns.

(1.) In French as well as in English, a noun used as the subject or nominative of an affirmative or negative sentence, generally precedes the verb :—

L'homme le plus obscur aime la liberté. CHATEAUBRIAND.	*The most humblest man loves liberty.*
L'espérance tient lieu des biens qu'elle promet. LA CHAUSSEE.	*Hope takes the place of the benefits which it promises.*

(2.) In poetry and in elevated prose, the subject is sometimes placed after the verb :—

Il n'est point de noblesse où manque *la vertu.* CREBILLON.	*Nothing noble can exist where virtue is wanting.*
La fortune est à craindre où manque *la sagesse.* BOURSAULT.	*Where wisdom is wanting, fortune is to be feared.*

(3.) In interjected sentences, that is, in sentences which we, while repeating the words of a person, *throw among* other sentences, to indicate that person as the speaker; the subject, in French, must always follow the verb :—

Heureux, *disait Mentor,* le peuple qui est conduit par un sage FENELON.	*Happy, said Mentor, the people who are governed by a wise king.*

(4.) In interrogative sentences, the noun generally precedes the verb, which must be immediately followed by a pronoun corresponding in gender, number, and person, with the noun :—

La mort est-*elle* un mal? La *vie* est-*elle* un bien? CREBILLON.	*Is death an evil? Is life a benefit?* Literally, *Death, is it an evil?* &c.

(5.) When the sentence commences with one of the following words, où, *where*; que, *what*; combien, *how much*; quand, *when*; the noun may be placed immediately after the verb, or in accordance with the last rule :—

Où est votre *père?* or Où votre *père* est-il?	*Where is your father?*
Mais que sert *un long règne,* à moins qu'il ne soit beau? BOURSAULT.	*Of what use is a long reign, unless it be glorious?*

(6.) The noun, used as a direct regimen, has the same place in the sentence in French as in English :—

La force fonde, étend et maintient un *empire.* SAURIN.	*Power founds, extends, and maintains an empire.*

(7.) When there are, in the same sentence, two nouns, one used as direct, the other as indirect regimen, and those nouns, with the words qualifying or modifying them, are of equal length, the direct regimen should precede the indirect* :—

Le malheur ajoute un nouveau *lustre* à la gloire des grand hommes. FENELON.	*Misfortunes add a new lustre to the glory of great men.*
Avez-vous donné *les livres* à mon frère? GIRAULT DUVIVIER.	*Have you given the books to my brother?*

(8.) When, however, the qualifying or explanatory words render the direct regimen longer than the indirect, the régime indirect is placed first :—

Avez-vous donné *à mon frère les livres* que vous lui aviez promis?	*Have you given my brother the books which you had promised him?*
Les hypocrites parent *des dehors* de la vertu *les vices les plus honteux.* NOEL.	*Hypocrites adorn with the appearance of virtue, the most shameful vices.*

(9.) The indirect regimen precedes the direct regimen, when the meaning would otherwise be doubtful :—

Tâchez de ramener par *la douceur* ces *esprits égarés.* BESCHERELLE.	*Try to bring back, by mildness, these erring spirits.*

Any other construction would render the sentence equivocal.

(10.) In English, the name of the possessor frequently precedes the name of the object possessed; and the two are connected by means of 's (the old Saxon genitive termination). In French the order is always different. The name of the object precedes that of the possessor, and the connecting link is a preposition :—

Les livres de mon ami.	*My friend's books.*
Vous avez vu la montre de ma sœur.	*You have seen my sister's watch.*

* This must also be the case when the régime direct is shorter than the régime indirect.

(11.) The name of an object always precedes the name of the substance of which it is formed, or which it contains. The preposition *de* comes between them :—

Une table de marbre.	*A marble table.*
La France a beaucoup de carrières de marbre.	*France has many marble quarries.*
Un bouteille de vin.	*A bottle of wine.*

(12.) The word representing an individual always precedes that describing his particular occupation, or the merchandise of which he disposes :—

Un maître de danse.	*A dancing master.*
Un maître de langues.	*A teacher of languages.*
Un marchand de drap.	*A draper, or dealer in cloth.*

(13.) The name of a vehicle, boat, mill, etc., always precedes the noun representing the power by which it is impelled, or the purpose to which it is adapted. The connecting preposition is generally *à* :—

Un moulin-à-vent.	*A wind-mill.*
Un moulin-à-farine.	*A grist-mill.*
Des moulins-à-eau.	*Water-mills.*
Une voiture-à-vapeur.	*A steam carriage.*
Un bateau-à-vapeur.	*A steamboat.*
Une voiture à deux chevaux.	*A two horse carriage.*

(14.) The name of an object precedes the noun representing its particular produce, use, or appendages, &c.; *à* generally connects these nouns :—

Le goût du fruit de *l'arbre à pain* ressemble à celui de l'artichaut. BERNARDIN DE ST. PIERRE.	*The taste of the fruit of the bread tree resembles that of the artichoke.*
Le nom de vertu, dans la bouche de certaines personnes, fait tressaillir comme le grelot du *serpent à sonnettes.* MME. NECKER.	*The name of virtue in the mouth of certain persons makes one shudder, like the noise of the rattle-snake.*
Les *bêtes à cornes* ne sont pas si nombreuses que les *bêtes à laine.*	*Horned animals (neat cattle) are not so numerous as sheep (wool animals).*
La salle-à-manger.	*The dining-room.*
Du bois à-brûler.	*Fire wood.*
Un verre-à-eau.	*A water-glass,* i. e *glass for water.*

See § (81), (2.)

CORRESPONDENCE.

ACQUISITION OF FRENCH.

A correspondent who writes to us, enquiring whether his communications have reached us, says :—

"It gives me great pleasure while writing, to inform you of the existence and progress of a French class to which I belong, and to express to you our thanks for the benefit we have derived from the lessons in that language which have issued from your office. Our class consists of *six* persons; it was formed at Oldham about 12 months ago. Several of us had studied the lessons reprinted from the 'Working Man's Friend,' before the formation of the class, and this prepared us for the lessons in the 'Popular Educator.' We paid very great attention at first to the rules for pronunciation, which were laid down in that work. We meet on Wednesday evenings, and each of us in his turn, reads the French sentences from the 'Popular Educator,' and the rest translate them into English. This is to accustom the ear to the French sounds. During the week, we write out the exercises; thus providing for our improvement both in writing and speaking the language. *We have never had a tutor. We have taught ourselves solely by means of the lessons which you have issued, price 6d.* '*The French Manual, the Lessons in the Popular Educator,*' and a few French reading books and dictionaries which we have bought second-hand at old book-stalls. During the time that we have been studying your lessons, we have been very anxious to know whether we had got the correct pronunciation; and whether we could speak so as to be understood by a Frenchman. The time at length arrived for satisfying our curiosity in that respect. I and another of our class fell into company one day with a native of Paris, and we found to our great gratification that he could understand all that we said to him in his own language, and that we were also able to understand the greatest part of what he said in his own tongue. I ought to state, however, that he understood *us* with perfect ease, never having once occasion to ask us to repeat what we had said; while we were obliged to do so to him several times, because he spoke so rapidly. I then read about 30 sentences to him from the 'Popular Educator,' with a view to see whether I pronounced them correctly

or not; and I found that he only corrected me twice out of that number of sentences. He expressed himself as very much astonished that we had learnt to pronounce French so well without the aid of a tutor. Before I conclude, allow me gratefully to acknowledge the assistance which I have derived in my geometrical studies from the notes and comments which you have added to the various definitions, propositions, &c., in Cassell's Euclid. With every wish for the success of your great and important undertaking," I remain, yours, &c.,

JAMES H. EASTWOOD.

LESSONS IN MECHANICS.—No. XXIII.

MINING OPERATIONS.

THAT which appears on the surface is not usually the most important; it is that which is demanded by the requirements of every day, and in this sense is valuable; but that which is of rarer value lies below—hidden, deep buried, and must be sought and found with persevering labour. Corn grows for man, and grass for cattle, on the soil, but the miner's wealth lies below; and hard-fisted labour, guided by the light of science, must be employed before the riches of the vein will yield their store. The mineral products of a country are the source of its greatest wealth. What, for example, would our own country be, deprived of coal and iron? Coal, it has been said, stands at the head of the mineral products of England; and we are probably more indebted to our inexhaustible supplies of this valuable mineral than to anything else for the extraordinary progress we have made in our manufacturing industry. Iron ranks next in importance to coal. It was known to exist at a very early period; and the Romans, and perhaps also the Britons, had iron works in the Forest of Dean and elsewhere in the kingdom. The production of tin is confined to Cornwall and Devonshire: these are also the great copper counties; but copper is also produced, though in smaller quantities, in North Wales, and some other parts. The total annual produce of tin is estimated at 4,500 tons, and that of copper, 1,300 tons; the worth of the former is from £65 to £80 per ton; that of the latter from £90 to £100 per ton.

Lead mines are also found in England, as well as zinc, plumbago, and a small quantity of silver. Salt is produced in considerable quantities in Cheshire; and there are stone quarries in various parts of England.

The existence of metals and minerals has given rise to the science of geology and metallurgy, and imparted a peculiar character to particular districts. Science, in pursuit of the useful minerals and metals, has shown a complete system of construction in the crust of the earth, of which our ancestors were totally ignorant: geological science has spoken to the earth, and the earth has taught us new lessons of the power and wisdom of Him who hath laid the foundations of the world.

The useful minerals are found in beds or layers; among the rocks are found combustible minerals—anthracites, coal, lignites, turf; but the mineral veins are not confined to any particular classes of rock, nor to any particular epoch of formation, nor to any fixed portion of the earth's crust, although they are the most frequent in beds that form mountain elevations, and in the oldest rocks. Hughes says the minerals are not distributed on the earth according to climate, like animals and vegetables; but, by the kindness of Providence, those which are most necessary to man are found in almost all countries, and others are more or less abundant, according to their importance. It is remarkable, also, that the most barren portions of the earth are often most plentiful in mineral treasures. The metallic substances oftentimes seem to have been forced up in a melted state from the interior of the earth, and, flowing into all the little fissures and cavities, to have hardened and crystallised. In such veins, the deeper we penetrate into the crust of the earth, the richer they become.

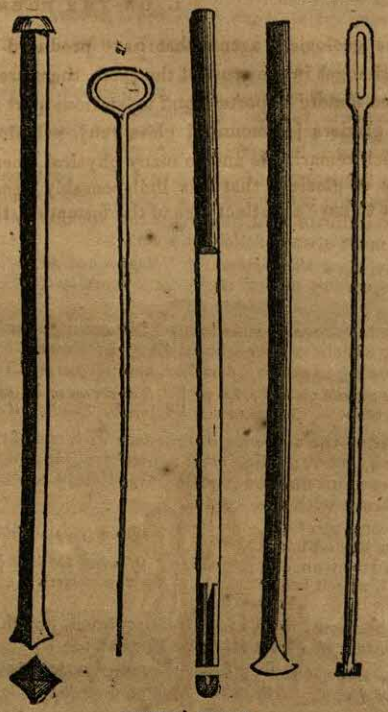
Wherever and in whatever form the minerals or metals are discovered, it is necessary, in almost all instances, to commence mining operations, and to conduct a laborious subterranean work before any profitable result can be obtained.

When bores are but a few fathoms in depth, the whole operation is performed by manual strength; but when a very deep bore is to be made, a set of wooden triangles, with a pulley, crane, or windlass, is used. There are professional bore masters in the coal districts, who undertake to put down bores for coal, and to register the strata passed through, at the rate, when no uncommon difficulties occur, of six shillings a fathom for the first five fathoms, and an increase of six shillings a fathom for every additional five fathoms.

The "pick" is a light tool, and somewhat varied in shape, according to circumstances. One side, used as a hammer, is called the "poll," and is employed to drive in the gads, or to loosen and remove prominences; the point is of steel. The "gad" is a wedge of steel driven into crevices at the point of the pick. The miner's shovel has a pointed form, and a long handle, somewhat bent.

The blasting tools are a sledge or mallet, a borer, claying bar, needle or nail, a scraper, and a tamping bar. The borer is an iron bar tipped with steel, like a chisel.

The accompanying figures represent the ordinary tools which are employed—with local variations—in mining operations:—



MINERS' TOOLS.

The method of blasting is performed by making a hole in the rock, filling it with clay, and then driving in the claying-bar, in order to render it perfectly dry. The powder charge is then introduced, the nail inserted so as to reach the bottom of the hole; the process of tamping then takes place, that is, cramming up the hole with small pieces of soft rock; the nail is then knocked out, and through this vent the safety fusee is introduced; the explosion takes place, and the rock is blasted. A slow match, made from a long dried reed, is sometimes used instead of the fusee, but the latter is now generally employed.

LITERARY NOTICES.

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LESSONS IN GEOLOGY.—No. XXXVIII

By Thomas W. Jenkyn, D.D., F.R.G.S., F.G.S., &c.

CHAPTER III.—ON THE INFLUENCE OF ATMOSPHERIC AGENTS ON THE EARTH'S CRUST.

SECTION VII.—ON GLACIERS.

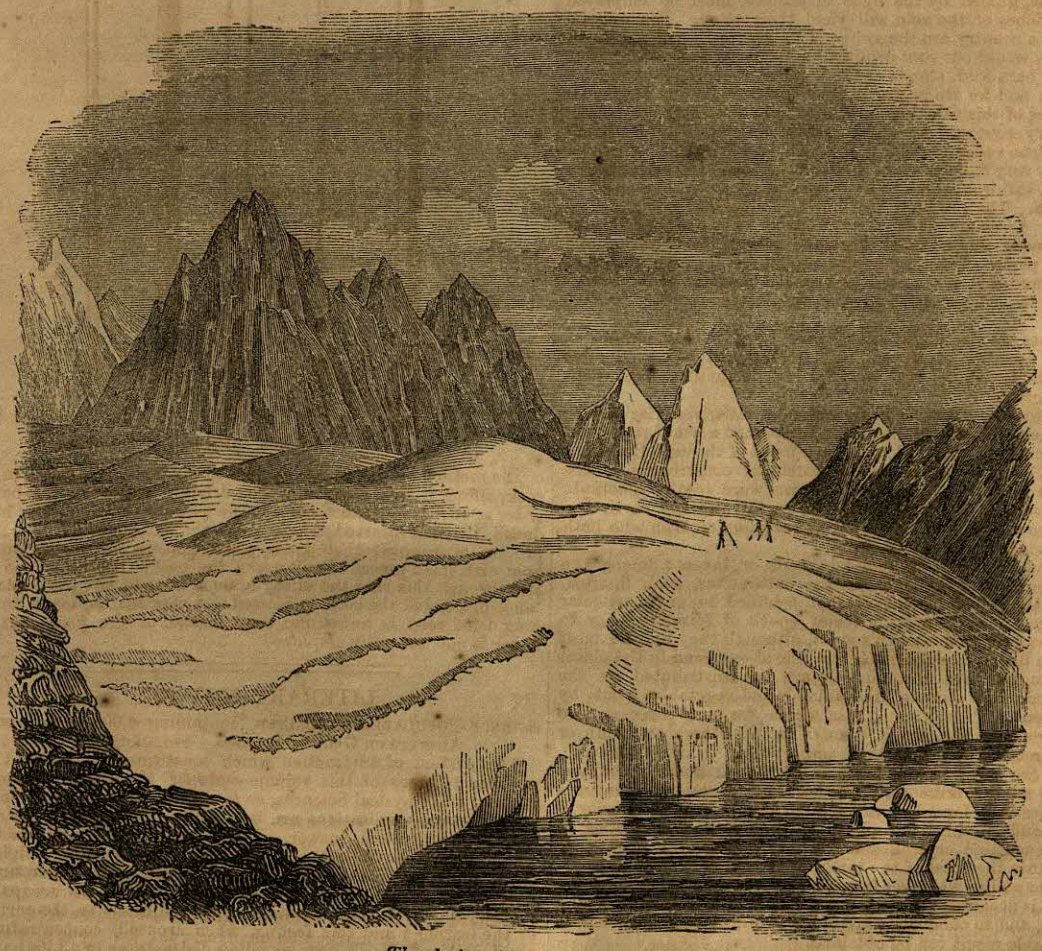
§ i. ON THE FORMATION AND ASPECT OF GLACIERS.

Among the geological agents that have produced great and extensive changes in the crust of the earth, there are none that have played a more important and mysterious part than what are called glaciers [pronounced gläss-yeh]. Geologists have ascribed such remarkable and so many physical phenomena to the agency of glaciers, that it is indispensably necessary for the student to have a distinct idea of the formation, the extent, and the action of these mighty agents. To furnish you with sufficient information to enable you to study glacial action, as represented in geological works, I am compelled to divide this lesson into two or three minor sections; and for the present to limit myself to the formation and aspect of glaciers.

In the works of travellers among the Alps, thousands of people have read about the "Mer de Glace," a French phrase which is rendered "Sea of Ice." This French name, and the English translation of it have given to the majority of readers, some erroneous ideas of a glacier. Some have regarded a glacier as being a frozen lake, embedded in some deep hollow among Alpine ridges, or a collection of land-locked water, frozen up into a mass that never melts. Others have thought that a glacier is an immense collection of mingled snow and ice, that have settled down as a confused heap, in some deep glen or defile, the result of fallen masses that have slidden down from the slopes of the mountains and rocks on each side:—in fact, that a glacier consists of the mingled masses of snow and ice, brought down from the mountains by avalanches, and then frozen afresh into one hard mass. Not one of these ideas gives a correct representation of a glacier.

The best way for you to have a clear and accurate concep-

Fig. 82.



The glacier of the Aletsch.

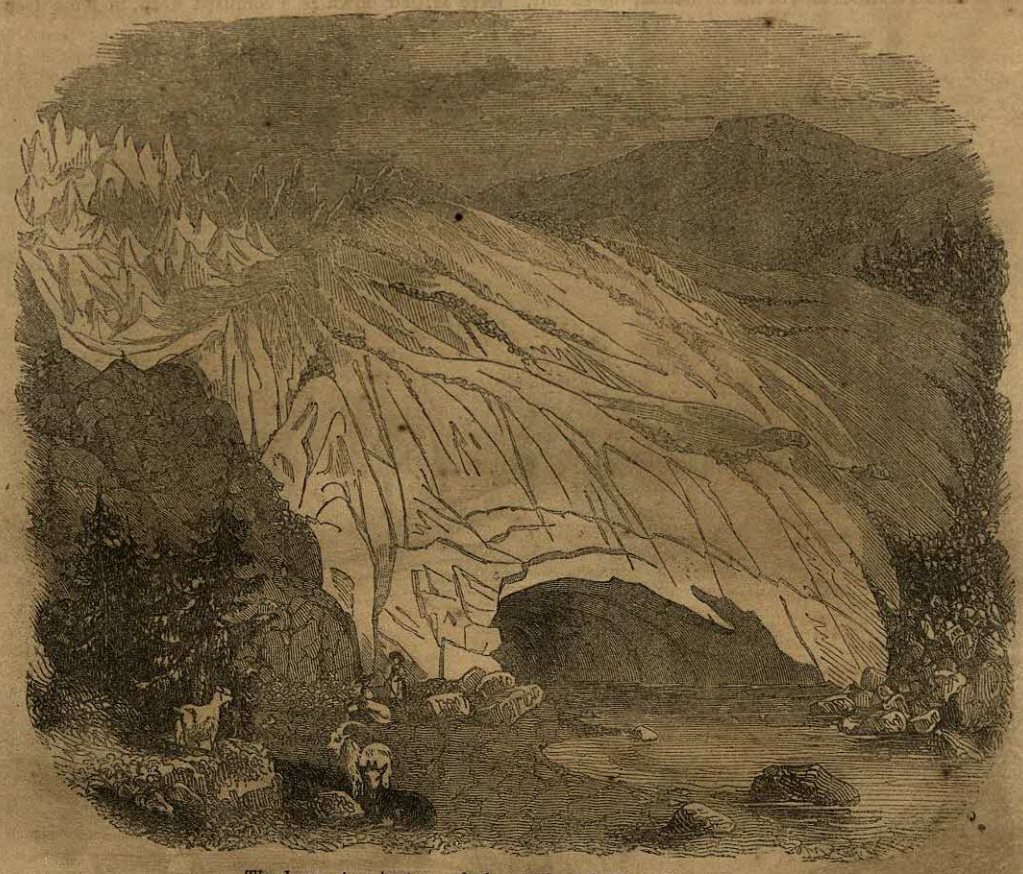
tion of a glacier is to imagine that a balloon has set you down quietly on the summit of Mont Blanc, and that from that point down towards some of the valleys, you are observing the glacial phenomena around you. To aid your imagination and study, examine closely the details of the engraving of Mont Blanc, given in our last lesson, page 248.

As you are walking down from the higher ridges, you find that the snow at that high elevation, is very different from the snow that you have been accustomed to in the lowlands. In England the snow lies in flakes, and soon becomes clammy and adhesive; but in the loftier regions of the Alps, all the snow about you is granular, and partly globular like small shot. All the snow there is in grains, and not in flakes. In your walk over this snow, you sink at every step, as if you had to walk over the floor of a room where the gardener or farmer keeps

teaux, on which the snow rests, would become higher and higher, at the rate of about an inch every year. This gradual rising in elevation would, if nothing counteracted it, attain to a great height in a thousand years. This counteraction takes place by the subsidence or the sinking of the firny snow that lies in masses on the solid rocks, down towards hollows and and defiles among the mountains, where it eventually becomes concreted into glaciers.

In descending the higher slopes, you find that the firny snow begins to cease to be granular and loose. It looks and feels under your feet as if it had been penetrated by thaw moisture and then re-frozen. Its texture is now more compressed; its particles adhere closer and firmer to each other; and it is more of a compact mass. This change of texture is effected in summer. It melted in the day; it froze again at night. This mass,

Fig. 83.



The lower termination of the glacier of Zermatt, or Gorner.

his store of peas or rice, into which you sink ankle deep or knee deep, according to the thickness of the bed of peas or rice over which you have to pass.

This kind of snow does not stick like flaky snow. It is so loose, like the peas or shot, that you cannot make a snow-ball of it. Though this kind of snow is sometimes seen in England on a day of very severe frost, yet we have no word to distinguish it from the snow which falls in flakes. The inhabitants of the Alps, however, have distinct names to designate this particular kind of granular snow. The Germans call it FIRN, and the French, NEVE. In our present lesson, I shall call this kind by the name of firny snow.

Among the higher ranges of the Alps, that is, at any elevation above 8,000 feet, the last year's snow never melts away completely in the summer; consequently the mountain pla-

then, after successive thawings and freezings, undergoes a fresh crystallization and is formed into coarse ice, forming a bed that extends downwards to a deep valley below you.

The line which marks this change in the firny snow, points out the origin of the glacier. This altered or transformed Firn is the source of the glacier. The glacier is only the drain of this Firn. The naturalist Hugi has shown that this line, or point of temperature at which firny snow changes into glacier ice is, in the Alps, invariable; it is at the height of 7,800 feet above the level of the sea. You will do well to keep in mind that a glacier consists of firny snow, partly melted and then recongealed, and in that state pressed into valleys or glens, where it is converted into perpetual ice. The ice, however, of the glacier is not like that which you see formed by the freezing of water. In the glacier, the ice is less dense and com-

pact, it has innumerable little clefts, cracks and crannies, and it abounds with air bubbles or bladders.

Having stopped to mark the line where the Firn terminates, you now see glaciers beginning to form on the flanks of the mountain, and a little lower down, they appear like vast streams of snow issuing from the throne of eternal frost, and directing their courses by the sides and along the sinuosities of the rocks, into the lower valleys, as represented in the engraving, page 248.

The number, the shape, and the dimensions of the glaciers, are regulated by the physical conformations of the higher regions of the Alps. The number of Alpine glaciers is supposed to be about four hundred, and they are represented as covering about 400 miles in extent of surface. Some of them are only a few square acres in extent, others cover many miles. They fill all the hollows and deep ravines found amid the higher ridges, and all the basins which exist between the loftier peaks. They send forth arms and branches downward to the inhabited valleys, even to corn-fields and vineyards. These streaming glaciers are sometimes three miles wide and fifteen miles long. It is only these branches or offsets that are seen by travellers in the Grindelwald, and in the neighbourhood of Chamouni. All these are only the extreme fringes of the garment of snow and ice with which the high monarch of European mountains is clothed.

These glaciers vary exceedingly in depth. In the upper part of the Alpine glens they are thicker or deeper than at their lower extremities. At their lower terminations they are frequently from 80 to 100 feet in thickness, but in the upper parts, their depth averages from 120 to 200 feet. Hugi estimated the depth of the Mer de Glace near Chamouni at 180 feet.

Wherever there is a glen or cleuch commencing about the line of the firny snow, and opening downward, there is always a glacier in it. If the glen dips or slopes very rapidly, the glacier soon terminates. If the glen be wide and tortuous, and ends in a tract somewhat level, or sloping gently into another defile, the glacier may be correspondingly extensive. Glaciers are sometimes full twenty miles in length, stretching from the higher ridges of the Alps, down to nooks and valleys where there are fields and orchards. These large and extensive glaciers are formed in valleys which slope gently, stretch continuously though tortuously towards the lower districts, and are enclosed on both sides by ridges which commence among the upper snow fields, but extend to a considerable distance below. Even the lowest extremities of the glaciers terminate at a line many thousand feet above the level of the sea. The glacier of the Lower Grindelwald reaches so low down as 3,409 feet above the sea. If you followed this glacier up to its source in the firny snow above, you would have to walk up 4,708 feet of ice. The glacier of the Upper Grindelwald has its lower edge at the elevation of 4,260 feet above the sea.

Fig. 81.

The Crevasses in the Mer de Glace under Montanvert.

The upper surface of a glacier is far from being level, smooth, and glassy like that of a frozen lake. It is so irregular, undulating and rough, that skating upon it would be utterly impracticable. At their lower termination, they sometimes swell out and undulate in immense bosses, like that of the Aletsch, as represented in fig. 82.

The diagram in fig. 82 exhibits the lower termination of the

glacier of Aletsch, where it enters the lake of Aletsch, which it caused at one time to overflow with great devastation. From this termination, masses of ice are frequently broken off, and float about like diminutive icebergs in the lake, as shown in the figure. The Aletsch glacier is one of the largest in the Alps.

In other cases, the upper surface of the glacier is covered by pointed masses and pyramidal peaks of ice, called Aiguilles or Needles. These pyramids of ice are graphically represented in the upper part of the extreme left of fig. 83, which shows the lower extremity of the glacier of Zermatt, called also the glacier of Gorner.

It is this peaked and crusted aspect of the upper surface that has suggested the frequent metaphor employed to describe a glacier, that it is like a sea in a storm frozen suddenly into firm ice. This glacier lies in one of the high valleys of Monte Rosa, where the river Visp takes its rise, as is represented in the foreground of the figure. Professor James Forbes says that "when the upper level of the glacier is viewed, either from the Riffel, or from the path up the Col of Mont Cervin, it presents a noble scene. It is a very vast ice river." The above figure shows that at the lower termination of most glaciers, there is a vault or cave, from which there issues, especially in the summer, a stream of water. This stream of water ramifies upward, amid the clefts of the ice as tributary rills generally do among very narrow ravines in mountain rocks.

It has been observed in an earlier part of this lesson, that the structure of glacier ice is not only less compact than the ice of frozen water, but that it abounds in cracks. Its entire source is more or less broken up by rents or dislocations. These cracks or rents are called Crevasses:—not crevices. They traverse even the upper portion of the glacier, before it becomes fractured as it appears at its lower termination. These crevasses are sources of great peril to travellers. They sometimes run across a glacier, but very rarely completely from side to side. One end of the crevasse may be but a few inches wide, but the further end may be thirty, fifty, and even a hundred feet.

These crevasses are formed mechanically by the motion of the glacier to fill up any vacancy occasioned in its lower portions and by the unequal pressure of different parts of the glacier towards that vacancy. This mechanical process is assisted by the action of the sun and the winds. In very many cases these crevasses are longitudinal, that is, they are frequently in the length and not in the breadth of the glacier. These dreadful crevasses, the sight of which almost chills the blood of the traveller, are well represented in fig. 84.

The crevasses of the glaciers are very rarely or never formed in winter, but in summer they are frequent. When the dislocation takes place, it is accompanied with a noise like thunder, and it produces a shock that makes the contiguous rocks tremble. Glacier chasms or crevasses are subject to constant changes every day, and almost every hour. The dislocations or rents are of two kinds, the day chasms and the night chasms. The Alpine guides give them these designations from a belief that a certain class of chasms are formed in the day only, and the other in the night. The day crevasses are broad and wide at the top, but their walls converge, or the chasm tapers wedge-like as it descends into the body of the glacier. The night crevasses are the reverse: towards the surface, the top edges approach almost to meet each other, and their walls diverge as they descend into the heart of the glacier, so as to form a kind of roof to a magnificent icy cavern below. In short, the day chasms are formed like the letter V, and the night ones like the letter A without the middle stroke. The tops of these night crevasses are frequently hidden by a slight covering of snow, which makes them exceedingly dangerous to travellers. Many persons have perished in them.

Fig. 85.

A Cave in the lower termination of a Glacier, with a Stream of Water issuing out of it.

Dangerous as all these crevasses are, it is possible by means of ropes, ladders, &c. to descend them. When they have been descended, the walls of the crevasse are found full of hollows, openings, caves, grottoes, and what miners would call adits.

Some years ago, a young chamois hunter fell into one of the crevasses, and was precipitated into one of these awful but beautiful caverns. As soon as he stopped, and partly recovered himself, he saw that he was doomed to certain death, for no human aid could reach him. As he reconnoitred his icy mausoleum, he could, through a chink in the glacier, see the blue heavens above him. All around him, long tangles of ice formations assumed, like starry incrustations in limestone caves, a vast variety of fantastic shapes, which glittered in the light that came from above and coloured them with beautiful green. It was a grotto, so capacious and so embellished, as if it were a state room in the palace of the spirit of the mountains: but to him, it was nothing but a splendid and cold tomb.

The cold air of the icy cavern would soon freeze him to death; he, therefore, as a hardy mountaineer and bold hunter, resolved, before he died, to look around him and to explore his grave. As he did so, he heard the sound of rushing water. His observation among the glaciers had taught him that this stream must issue from the glacier at its lower termination. He determined to follow the course of the water, guided only by its trickling sound. He soon lost the crack or chasm through which he had seen the blue heavens—but a very faint dull light penetrated through the entire body of ponderous ice with which he was covered, and by the aid of this, after distressing toils and hair-breadth escapes, he came to the light and life of day, by the glacier cave that formed the outlet of the stream. The vault or cave at which he made his egress from the glacier, is represented in fig. 85.

The magnificence and beauty of these caves or grottoes in the walls of glacier crevasses, have not been left to be explored by accident only. Men devoted to science, and distinguished naturalists, like Professors Hugi and Agássiz (pronounced á-gas-see), have actually pitched their tents and lodged upon the glaciers for the sake of studying them, and have even made it their daily work to descend these awful chasms for the sake of exploring their extent, and investigating their structure and movements. Some of the glacier caverns or grottoes are capacious enough to receive with ease one of our largest frigates. In fantastic forms, and glittering embellishments, they surpass all former conceptions of wildness, beauty, and glitter.

Professor James Forbes, during his numerous excursions in the Alps, paid great and strict attention to the crevasses of glaciers. He says that when a glacier is not violently dislocated by moving over excessively steep or irregular surfaces, the cracks generally take place in a direction perpendicular to the structure of the glacier. Some of these crevasses of the Mer de Glace, shown in fig. 84, are probably two thousand feet long. Old crevasses are constantly being closed up, and new ones formed, and cutting the old one across. It is this action that produces the tumultuous looking hillocks that frequently cover the upper surface of a glacier. Most crevasses are formed in spring, summer, and autumn, during which seasons the last year's surface of the glacier is in some respects entirely changed. This shows that the chasms are, in a great measure, formed afresh every season.

This lesson has been limited to the formation and general aspect of glaciers. It has been designed merely to furnish the elements of information which are necessary to prepare you for studying and comprehending some of the more remarkable effects ascribed by geologists to glacier action. This action you could not understand, without having some distinct conception of the manner in which glaciers are formed and extended. If you wish to study this formation more scientifically, you must read Professor James Forbes's large and learned work, entitled "Travels through the Alps," 1843. You will find, also, many interesting facts illustrative of the formation of glaciers in a work called "The Alps, &c," now issuing in monthly parts from the office of Mr. Cassell; a work which brings together much valuable and entertaining information.

Il y a deux choses auxquelles il faut se faire, sous peine de trouver la vie insupportable: ce sont les injures du temps et les injustices des hommes.—*Chamfort.*

Une injustice faite à un seul est une menace faite à tous.—*Montesquieu.*

L'intérêt parle toutes sortes de langues, et joue toutes sortes de personnages, même celui de désintéressé.—*La Rochefoucauld.*

Comptez rarement sur l'estime et la confiance d'un homme qui entre dans tous vos intérêts, s'il ne vous parle aussi des siens.—*Vauvenargues.*

Pour qui sont le malheur et la pauvreté, les querelles, les gémissements et les blessures qu'on se fait sans sujet? pour qui est la rougeur et l'obscurcissement des yeux? N'est-ce pas pour ceux qui passent beaucoup de temps à boire du vin et qui vont chercher où on boit le plus fort? Ne regardez point le vin lorsqu'il est vermeil et que sa couleur brille dans le verre: il entre agréablement; mais il mord à la fin comme un serpent, et il répand son venin comme un basilic.—*Salomon.*

LESSONS IN ENGLISH.—No. IX.

By John R. Beard, D.D.

The Verbs; *Have*; *Do*; *Will*; *Shall*.

To have, when uncombined with another verb, is formed thus—

Paradigm of *to have*: Uncombined function, principal parts *have*, hav*ing*, *had*.

Independent Form.

		Present tense.	*Past tense.*
Sing.	1.	I have	I had
	2.	Thou hast	thou hadst
	3.	He has	he had
Plural.	1.	We have	we had
	2.	You have	you had
	3.	They have	they had

Infinitive, *to have*; present participle, hav*ing*; past participle, *had*. The dependent form is produced by simply prefixing *if* to the parts. The elliptical form is produced by prefixing *if* to the parts, and substituting *have* for *hast* and *has*. The imperative form also is produced by placing the pronouns of the second person singular and plural after the form *have*.

By repeating the word *had* another form or tense is produced, which commonly bears the name of "the pluperfect tense."

The pluperfect tense of *have*, I had had, thou hadst had, he had had, we had had, you, &c.

Pluperfect properly means *more than perfect*. In reality this form *I had had* denotes an action past in relation to another past action. Let

Pluperfect.	*Perfect.*	*Present.*
A.	B.	C.

represent three distinct actions, of which C, now going on, is called present, B, over and gone, is in regard to C past, and A over and gone in regard to B, is past to a past. The action C, then, is in the present tense, B is in the perfect tense, and A is in the pluperfect tense.

Thus, in the verb *to have* we find

A *Simple State* (and)	*A Compound State.*
	I had had
I have, I had	I shall have
	I shall have had.

But *to have* performs also a combined office. Entering into alliance with the past participle of the verb *to be*, it adds other forms to the verb *to be*, thus:—

I have been, I had been, having been.

Let us look a little closely at the form "I have been." *Have*, we have seen, is present; *been* has been set down as the past participle. Viewed in relation to its component parts, this form might be called a past present; that is, a past which is a past so as also to be present. Now how, in the nature of things, can an action be past so as also to be present? a past action may have present consequences; or an action may be so recently past as to have scarcely vanished from view, and thus is a sort of proximate present. When I say "I have seen your uncle," or "I have been to supper," I speak of something which took place just now, the results of which are still in existence; but if I mean to speak of these actions as wholly past, or as something which took place indefinitely in past time, I say, "I saw your uncle;" "I had my supper."

Instead of the participle *been*, we might employ the past participle *had*, and then we obtain this form.

I have had, &c.

Now the compound forms I have been," "I have had," viewed etymologically, are very curious. "I have been" is I hold, I possess the fact of being in past time; in the past I was, and that *was* is still in my hands. So "I have had" is the same as I had something in past time and have or hold that something still. But "I had had" means that the thing which I possessed in past time, I possessed before that past began to be; e. g.

I had already had my supper when your father entered.

The verb *to have* combines with verbs in general, thus:—

I have touched, I had touched, having touched, having been touched.

Had, the past tense of *to have*, is sometimes used to express a desire or a condition; e. g.

"I had rather be a dog and bay the moon than such a Roman."—*Shakspeare.*

"If the mighty works had been done in Tyre or Sidon."—(Luke xii. 3).

Standing by itself, the verb *to do* has a very comprehensive signification.

Do becomes *did* in the past tense.

Do is also employed in combination. In combination, *do* slightly varies in form from *do* as uncombined, thus :—

	Do Uncombined.	*Do Combined.*
Sing.	I do	I do
	Thou doüst (pronounced do-est)	thou dost
	He does or doëth	he does
Plural.	We do	
	You do	
	They do	

In combination *do* is a very useful verb. *Do*, placed before a verb of general import, produces what may be termed *the emphatic form*, as I *do* love, I did love. This form is found only in the present tense and in the past tense. *Do* also before the verb, but with the pronoun after itself, produces the *interrogative form*, as do I love? did I love? By the introduction of *not* we obtain *the emphatic negative* and *the emphatic interrogative*. Another form may be called *the substitutional*, namely, that in which *do* stands as a substitute for a verb immediately preceding, as "do you love learning?" "I *do*." Thus we have the ensuing forms.

The emphative affirmative,	I do love learning
The emphative negative,	I do not love learning
The interrogative,	do you love learning?
The emphatic interrogative,	do you not love learning?
The substitutional,	do you love learning? *I do*; *I do not.*

I may exhibit these forms with the verb *touch*; e. g.

I do touch; I do not touch; do I touch? do I not touch? you touch, but I do not. So I did touch. &c.

In the passive, the emphasis is given by accent, that is the stress of the voice is thrown on the emphatic or important words; e. g. "you *are* touched;" "no! I am *not* touched; *are* you touched?" "Yes, I *am* touched." The emphasis may be varied according to the sense.

Shall and *will* are two verbs which are of great service in the English language. Being of Saxon origin, they are used with perfect accuracy only by men whose Saxon lineage secures them from mistake.

Shall comes from the German *sollen*, which denotes *duty*, obligation, or necessity as depending on the will of another. Will comes from the German *wollen*, which denotes determination depending on your own will; e. g.

"The wise *shall* inherit glory, but shame *shall* be the portion of fools."—(Prov. iii. 35).

"His enemies *will* I clothe with shame, but upon himself *shall* his crown flourish."—(Psalm cxxxii. 18).

A more or less marked reference to these distinctive meanings runs through the applications of these words. Let us take a few instances :—

I shall go	thou shalt go
I will go	thou wilt go

When a person says "I *shall* go home this evening," he announces a future event as a matter settled and fixed by considerations independently of himself; but when he declares "I *will* go home this evening," he speaks of a future event as having its cause and its accomplishment in his own mind.

"Thou *shalt* go" announces my resolution; "thou *wilt* go" declares thine.

The following examples will illustrate the usage of these words.

A. "Let them go." B. "They will *not* go." A. "Will they *not* go?" they *shall* go." B. "They have changed their minds, and *will* go."

A. "I shall go to town this morning; *will you* go with me?" B. "No! I shall go this *afternoon*." A. "No this *afternoon*, if you please." B. "Why *not*," A. "Ask no questions, you *shall not* go." B. "I beg your pardon, I *will* go."

A. "John shall *not* go home." B. "John *will* go home." A. "*Shall* John go home?" B "John will *not* go home." Here the will of another is contrasted with John's will; the will of another requires *shall*, the will of John requires *will*.

In general the meanings of these two verbs may be arranged under the heads of obligation, and resolution; thus :—

Obligation.	*Resolution.*
I shall go	I will go
Thou shalt go	thou wilt go
He shall go	he will go
We shall go	we will go
You shall go	you will go
They shall go	they will go

Obligation and resolution have reference to the future. Hence *shall* and *will* come to express simple futurity, yet with some slight difference, thus :—

Futurity.

1. I shall go	we shall go
2. Thou wilt go	you will go
3. He will go	they will go

The employment of *shall* instead of *will*, in the first person, arises probably from the fact, that the act thus announced as about to take place, ensues from duty or obligation arising outwardly, but inwardly contemplated as proper and as recognised, and consequently as now about to take place in virtue of a tacit act of the speaker's will. If, however, the will or resolution of the speaker even in a slight degree intervenes, and is prominent in his mind, then *will* is employed of a future act, and not *shall*; e. g.

Shall. *I shall* think my time well spent in instructing you.

Will. He keepeth thee that *will* not slumber (Ps. cxxi. 3).

In the ensuing verse (Ps. cxxi. 4.) we have these words, "Behold, he that keepeth Israel *shall* neither slumber nor sleep." Without a difference in the original Hebrew, the translators have made a difference here between will and shall; yet is the difference one merely of manner, one that relates, I mean, solely to the way in which the fact is regarded, a *modal* difference; for in the former case the idea is presented as depending on God's will, in the latter it is presented as a settled fact; in the former there is a kind of implied promise, in the latter a future event is announced as simply future. It is curious to observe that a greater degree of certainty attaches to *shall* than *will*. The reason may be, that what depends on the will depends on a changeable cause; but what depends on obligation, on necessity, and on the fixed and settled states of things which hence arise, depends on certainties, on causes the operation and effects of which are parts of the regular course of events, or inevitable consequences of arrangements not to be changed. Compare the use of *shall* as found in Matthew xxv. 31 and following verses.

In the exercises for parsing or analysis, I shall give some instances of the use of *shall* and *will*, to which the student should pay close attention.

Will, when it signifies strictly to determine, may stand by itself, and is formed rather differently from *will* when used in combination; e. g.

Will Uncombined.		*Will Combined.*	
I will	we will	I will read	we will read
Thou *willest*	you will	Thou *wilt* read	you will read
He *wills*	they will	He *will* read	they will read

The uncombined form is, the student will see, the ordinary form, as thou touch*est*, he touch*es*.

This uncombined form must not be confounded with the elliptical form; e. g.

"Will he go?" Answer, "He will."

That is, "he will *go*, the elliptical word, or the word omitted, being *go*. *Shall* is occasionally employed in the same or a similar manner; e. g.

"He will *not* go." "But he *shall*."

Will has a past form, namely *would*; and *shall* has a past form, namely *should*. *Would* and *should* retain the meanings of their primitives will and shall. But those meanings undergo modifications. I give some examples.

Would denoting willingness.

I would come to you, if I could.
He would do it, if he had power.
They would have written, but were prevented.

Should denoting duty.

I should study more diligently, but I am idle.
He should go into the country to see his father.
You should learn pieces of poetry by heart.
They should not go out in the rain.

Would sometimes denotes a wish; e. g. "Would that the play

were over!" *Should* sometimes expresses a condition; e. g. "Should the French invade England, they will be thoroughly beaten." *Would* may signify a habit, as, "he would wander abroad like a distracted person."

Would and *should* may exist in an indicative (or independent) and in a dependent form; e. g.

Independent.	*Dependent.*
I should like some milk.	If I should like some milk.

It is impossible to find any one word which comprises all the compass of meaning involved in *will* and *shall* or in *would* and *should*. As, however, *will* and *shall* invariably denote futurity, whatever else they denote, they may be taken as signs of the future tense in English; and as *would* and *should* often denote a condition, they may be considered as forming a conditional tense or form. Thus arise these forms.

The future tense of the verb to teach.

I shall, thou wilt, he will, we shall, you will, they will—teach.

Shall and *will* combine with *have* and *been*, making other forms of the verb with correspondent modifications of import; e. g. I shall have taught; I shall be taught; they will have been taught. There are yet two forms of *will* and *shall* which must be distinctly presented, thus:—

Absolute Form.

1. I will, I shall	We will, we shall
2. Thou wilt, thou shalt	You will, you shall
3. He will, he shall	They will, they shall.

Conditional Form.

1. I would, I should	We would, we should
2. Thou wouldst, thou shouldst	You would, you should
3. He would, he should	They would, they should.

Will has a participial form used as an adjective, namely will*ing*; e. g.

A willing mind learns with ease and makes rapid progress.

The infinitive *to will* is sometimes used; e. g.

"Simply to will any thing, is of nature; but to will what is good, is of grace."—*Cruden.*

Shall is without participle and without infinitive.

LESSONS IN GERMAN.—No. LXI.

§ 66. Interrogative Pronouns.

(1) The interrogative pronouns, that is, those used in asking questions, are the following:

wer? was? who? what?
welcher? who? which?
was für ein? what sort of a?

(2) They are the same in form as the relatives; or rather the relatives themselves employed in a different way. Wer, was, and welcher, welche, welches, are declined just as when they are relatives, except that the pronoun welcher, -e, -es, when interrogative, never adopts the genitive of der.

(3) Wer and was (*who? what?*) can never be joined with a noun. They are used when the question is put in a manner general and indefinite. Welcher, welche, welches, on the other hand, have a more definite reference, and may be employed adjectively: thus, welcher Mann? which man? &c.

(4) Was für ein (literally, *what for a?*) is a form used in inquiring as to the *kind*, *quality*, or *species* of a thing: as, was für ein Mann? what sort of a man? was für eine Frau? what sort of a woman? was für ein Kind? what kind of a child?

(5) The only part of was für ein capable of inflection, is ein; which, when the thing referred to in the question is *expressed*, takes the form of the indefinite article: when it is left *understood*, ein is inflected like an adjective of the Old form. The plural, in both cases, omits the article, and stands simply thus, was für.

(6) Was für ein, *with* a substantive.

	Singular.			*Plural.*
	Masc.	*Fem.*	*Neut.*	*For all genders.*
N.	was für ein,	eine,	ein;	was für, what sort of?
G.	was für eines,	einer,	eines;	was für, of what sort of?
D.	was für einem,	einer,	einem;	was für, to what sort of?
A.	was für einen,	eine,	ein;	was für, what sort of?

(7) Was für ein, *without* a substantive.

	Singular.			*Plural.*
	Masc.	*Fem.*	*Neut.*	*For all genders.*
N.	was für einer,	eine,	eines;	was für.
G.	was für eines,	einer,	eines;	was für.
D.	was für einem,	einer,	einem;	was für.
A.	was für einen,	eine,	eines;	was für.

§ 67. Observations.

(1) Observe further, that ein, in was für ein, is sometimes omitted in the *singular*, especially before words denoting materials, as, was für Zeug, what sort of stuff? was für Wein, what kind of wine.

(2) That was für ein, and also welch (that is, welcher, without the terminations of declension) are occasionally employed in expressions of surprise or wonder; as, was für ein Mann, or welch ein Mann! what a man!

(3) That was is sometimes used for warum: thus, was schlägst du mich? why strikest thou me?

§ 68. Verbs.

(1) A verb is that part of speech which defines the *condition* of a subject: that is, shows whether it *acts*, is *acted upon*, or merely *exists*.

(2) In respect to *form*, verbs are either regular or irregular simple or compound.

(3) In respect to *meaning*, verbs are active transitive, active intransitive, passive, neuter, reflexive, or impersonal. These terms have in German the same general signification which they have in English.

(4) The German, like the English verb, has its moods, tenses, numbers, persons and participles.

(5) There are *five* moods; viz.: the Indicative, the Subjunctive, the Conditional,* the Imperative, and the Infinitive.

(6) There are *six* tenses: viz: the Present, the Imperfect, the Perfect, the Pluperfect, the first Future and the second Future.

(7) Both of the moods and tenses designate in German, just the same things which the corresponding ones do in English. For their general signification, see the paradigms; and for explanation of their uses, see the Syntax.

§ 69. Participles.

(1) There are *three* Participles: viz: the *Present*, which terminates in end, and answers in signification to the English participle in *ing*; as lobend, prais*ing*.

(2) The *Perfect*, which, besides prefixing in most cases the augment ge, ends, in verbs of the Old Form, in en or n; and in those of the New Form, in et or t; and has a meaning corresponding to our participle in *ed*: as, getragen (ge+trag+en) carri*ed*; gelobet ge+lob+et) prais*ed*.

(3) The *Future*, which is produced by prefixing the particle zu (*to*) to the form of the Present Participle, (lobend) thus, zu lobend, which means *to-be-praised*, that is, *praiseworthy*.

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* The *Conditional* is made up of the Imperfect Subjunctive of the auxiliary verb werden, (which see) and the Present and Perfect Infinitive of another verb. It is used to denote what is also often denoted by the Subjunctive (Imperfect and Pluperfect), namely, a *supposed condition* of things, i. e. *possibility* without *actuality*. By some it is treated as a distinct *mood*: by others, it is made to consist of two *tenses*: its *use* is the same in both views.

(4) The Particle Ge mentioned above, as being generally prefixed to the perfect participle, was originally designed, it would seem, to indicate *completed* action. It is commonly accounted merely *euphonic*, or at most *intensive*. The instances in which it is altogether *omitted*, are these:

First: in the case of all verbs compounded with *inseparable* prefixes; (See § 94.) as belehrt, (not gebelehrt) informed:

Second: in the case of verbs from foreign languages, which make the infinitive in iren or ieren: as, ſtudirt, (from ſtudiren) studied; instead of geſtudirt:

Third: in the case of the verb werden, when joined as an auxiliary to another verb: as, ich bin gelobt worden, (not geworden) I have been praised.

§ 70. Auxiliary Verbs.

(1) In German, the auxiliary verbs are usually divided into two classes.

(2) The FIRST CLASS consists of three verbs, without which no complete conjugation can be formed. They are haben, *to have*, ſein, *to be*, and werden, *to become*. These verbs, though chiefly employed as auxiliaries, are often themselves in the condition of *principal* verbs. In that case, they *aid one another* in the formation of the compound tenses, as may be seen in the paradigms.

(3) As auxiliaries, these three verbs enter into the composition of the compound tenses, active and passive, of all classes of verbs.

(1) Haben is used in forming the perfect, pluperfect, and second future tenses in the active voice: thus, from loben, to praise, we have

Perfect.	ich habe gelobt,	I *have* praised.
Pluperfect.	ich hatte gelobt,	I *had* praised.
2nd Future.	ich werde gelobt haben,	I shall *have* praised.

(5) Sein is used in forming the perfect, pluperfect, and second future tenses, both in the active and passive; thus, from loben, to praise, and wachſen, to grow, we have

	Active.	*Passive.*
Perfect.	ich bin gewachſen, I *have* grown.	ich bin gelobt worden, I *have* been praised.
Pluperfect.	ich war gewachſen, I *had* grown.	ich war gelobt worden, I *had* been praised.
2nd Future.	ich werde gewachſen ſein, I shall *have* grown.	ich werde gelobt worden ſein, I shall *have* been praised.

In the formation of these tenses, wherever any part of ſein occurs, it is *Englished* by the corresponding part of the verb haben: thus, ich bin gewachſen, I *have* grown, &c. This arises from the necessity of suiting the translation to our language, which in these places requires the verb *to have*.

(6) Werden is used in forming the future tenses and the conditionals: thus, from loben, to praise, we have

	Futures.	*Conditionals.*
1.	ich werde loben, I *shall* praise.	ich würde loben, I *would* praise.
2.	ich werde gelobt haben, I *shall* have praised.	ich würde gelobt haben, I *should* have praised

Werden is also employed with the perfect participle of a principal verb, to form the Passive voice; (See § 84.) Note, also above, that werde and würde are rendered by their equivalents *shall* and *should* in the conjugation of the English verb.

§ 71. Remarks on the use of haben and ſein.

(1) As the Perfect and Pluperfect tenses of verbs must be conjugated, sometimes with haben and sometimes with ſein, it becomes important to know *when* to use the one and when the other. The determination of this question depends chiefly upon the *signification* of the main verb. The general rules are the following:

(2) Haben is to be used in conjugating all *active transitive verbs;* all *reflective verbs*, all *impersonal verbs*, all the auxiliaries of the second class (viz. dürfen, können, mögen, wollen, ſollen, müſſen and laſſen), and *many intransitives*.

(3) Sein is to be used in conjugating all *intransitive* verbs, signifying a change of the condition of the subject: as, gedeihen, to prosper: geneſen, to recover: reifen, to ripen; ſchwinden, to dwindle; ſterben, to die; all verbs indicating motion towards or from a place: eilen, to hasten; gehen, to go, reiten, to ride; ſinken, to sink; and also, all verbs in the passive voice.

(4) Some verbs take, in the formation of these tenses, either haben or ſein, according as they are employed in one sense or in another. This, however, will be best understood by practice in reading and speaking. The following are examples:

Er iſt in ſeinem neuen Wagen fortgefahren.	He has driven off in his new carriage.
Mein Bruder hat fortgefahren deutſch zu leſen.	My brother has proceeded to read German.
Das Waſſer iſt gefroren.	The water is (has) frozen.
Den armen Mann hat es in dem kalten Zimmer gefroren.	It has chilled the poor man in the cold room.
Die Thränen ſind über die Wangen geronnen.	The tears have flowed over the cheeks.
Das Gefäß hat geronnen.	The vessel has leaked.
Das Schiff iſt auf einen Felſen geſtoßen.	The ship has struck upon a rock.
Das Volk hat den König vom Throne geſtoßen.	The people have thrust the king from the throne.
Das Schiff iſt ans Ufer getrieben.	The ship has been driven upon the shore.
Der Baum hat neue Zweige getrieben.	The tree has shot forth new branches.

LESSONS IN GERMAN PRONUNCIATION.—No. VIII

Der hungrige Araber.
Dair höông'-ri-gai å-råh'-ber.

Ein Araber war verirrt in der Wüſte. Zwei Tage
Ine å-råh'-ber vâhr ferr-irrt' in dair vü'-stai. Tswi tâh'-gai
hatte er nichts zu eſſen und war in Gefahr, Hun-
hât'-tai air nĭchts tsoo ess'-sen öönt vâhr in gai-fâhr', höön'-
gers zu ſterben, als er endlich eine von den Waſſer-
ghers tsoo sterr'-ben, âlss air ent'-lĭch i'-nai fon dain vâss'-ser-
gruben antraf, an denen die Reiſenden ihre Kameele
groo'-ben ân'-trâhf, ân dai'-nen dee ri'-zen-den ee'-rai kâh-mey'lai
tränken. Hier ſah er auf dem Sande einen kleinen le-
tren'-ken. Here zâh air ouf dem zân'-dai i'-nen klī'-nen lai'-
dernen Sack liegen. Gott ſei gelobt, ſagte er, als
der-nen zâck lee'-ghen. Got zi gai-lo'pt', zâhch'-tai air, âlss
er ihn aufhob und anfühlte; das ſind, glaube ich,
air een ouf'-hope öönt ân'-fü'l'-tai; dâss zĭnt, glou'-bai ĭch,
Datteln oder Nüſſe; wie will ich mich an ihnen erquik-
dât'-teln o'-der nüss'-sai; vee vill ĭch mĭch ân ee'-nen err-quick'-
ken und laben. In dieſer ſüßen Hoffnung öffnete er
ken öönt lâh'-ben. In dee'-zer zü'-ssen hof'-nöönk öf'-nai-tai air
den Sack, ſah was er enthielt und rief voll Traurigkeit
dain zâck, zâh vâss air ent-heelt' öönt reef foll trou'-rich-kite
aus: Ach, es ſind nur Perlen.
ouss: âch, ess zĭnt noor perr'-len.

Vocabulary.

hungrig, hungry
ſich verirren, to stray, to lose one's self
Wüſte, *f.* desert
Gefahr, *f.* danger
endlich, at last
Grube, *f.* pit
antreffen, to find, meet
Reiſende, *m.* traveller
tränken, to give to drink
ledern, leather, of leather
loben, to praise
aufheben, to lift up
anfühlen, to feel
glauben, to believe
Dattel, *f.* date
erquicken, to refresh
laben, to comfort
Hoffnung, *f.* hope
hoffen, to hope, to wish
enthalten, to contain, hold, to keep from
voll, full (of)
Traurigkeit, *f.* sadness
keit, *Affix*, ness
Perle, *f.* pearl.

LESSONS IN BOOKKEEPING.—No. V.

(*Continued from page* 264.

THE next book which falls under our consideration is the *Day-Book*, which as we formerly remarked, might be more properly denominated *Goods-Book*, as it contains the particulars of the purchases and sales of *Goods on credit*; but this term is too limited, if, as is generally done, it is made to contain the particulars of all other transactions which do not strictly belong to the Cash-Book or the Bill-Book. In mercantile houses, where the particulars of important transactions are numerous and minute, as in the case of the entries of invoices of the shipments of Goods, and the sales of consignments, it is usual to make only an abstract of these particulars, and to refer to the *Invoice-Book* and the *Sales-Book* for those which are necessarily omitted. In like manner, when the particulars of Insurances on Goods, Speculations in inland or foreign produce, or Adventures to or from foreign countries, become too numerous or cumbersome to be entered at length in the *Day-Book*, references must be made to those Books which are specially kept for these purposes. In transactions where Goods are sold for Cash, the particulars must still be entered in the usual manner in the *Day-Book*, just as if they had taken place *on credit*; and the particulars of the transactions relating to the money paid for the Goods must also be entered in the *Cash-Book*. Were this not done, the accounts both of Property and Persons could not be kept in a proper manner, and nothing but confusion and error would ensue; we cannot, however, stop here to explain the reason of this or of many other things which we have said in this Introduction, otherwise we should never have done; but the reason will be sure to suggest itself to the attentive student. In home or inland transactions, where Goods are purchased by a Merchant on Commission as an Agent for another party, it is usual to enter in the *Day-Book* only the gross amount or sum on which the Commission is calculated, and the Incidental Expenses attending the Purchase and the Transmission of the Goods to the Principal, or party for whom the Merchant is Agent, without entering into the more minute details. This will be exemplified in the first part of our system relating to *Inland Trade*.

The method of keeping the *Day-Book* which we shall adopt in our Lessons, is a modification or rather an improvement of the principle of *Check Entries* by means of Double money columns invented by Mr. Jones, and strongly recommended by numerous Accountants, Merchants, Bankers, and others who adopted it in their Counting Houses in London, Liverpool, Leeds, Manchester, Glasgow and Edinburgh. This method consists in having *Dr.* and *Cr.* money columns in the *Day-Book*, and putting in the one column the net sum to be carried to account in a line with the names of the *Debtor* and *Creditor* in any entry; and in the other column the cost of the *Goods*, &c. in a line with their quantity and price. In the former column, are also entered the Discounts, Commissions, and other deductions from the cost; and in the latter column, are entered all Charges, Incidental Expenses, &c. forming additions to the cost. Owing to this arrangement, when properly effected, it is found that when the two columns are added up at the bottom of every page, and at the end of every month, their amounts always exactly agree, unless some error has been committed. Hence, if this process is carried on from page to page, such error cannot remain undetected longer than the time required to finish the page in which it occurs.

The same method of checking erroneous entries is adopted in the *Journal*, where it is even of more importance than in the *Day-Book*. In the *Journal* also, are employed the Double money columns marked *Dr.* and *Cr.*, and these contain all the sums placed to the *Debit* and *Credit* of the Different Accounts which are kept in the Books, according as they occur in the Monthly Entries. Hence, as both the *Debtor* and *Creditor* are mentioned in each entry, the amounts of the sums entered in both columns, whether taken page after page, or month after month, are sure to agree, if no mistake has been made in entering them; if there has, as we said before, it will be detected as soon as the Bookkeeper reaches the bottom of the page. But this advantage, although great in keeping the *Journal* free from error, is not the only one gained by the adoption of this method. For the *Ledger* itself being a periodical transcript of the *Journal*, the amounts of all the sums entered in the *Dr.* and *Cr.* columns of the Ledger during any given period, must exactly agree with the amounts of the sums entered in the columns of the same name in the Journal. In this way a regular and complete system of *Checking Entries* in Bookkeeping is obtained; the liability to commit error in *posting* is very much diminished, if not altogether removed; and the speedy detection of error is rendered almost certain in the hands of an intelligent Bookkeeper. Moreover, the process of balancing the Books at the year's end, which has always been considered a serious task under the old systems of Bookkeeping, is thus made an operation of comparative ease, accuracy and certainty.

It being now clearly understood by the student, that the *Journal* is not in business what its name implies, a mere record of *daily occurrences*, but a Collection of all the entries of the transactions of any concern for a given period, which are intended to be carried to account in the *Ledger*; it becomes necessary to explain how this part of Bookkeeping is performed. The Journal is made up from the *Daily or Subsidiary Books* which have been already described; and the process of making up, that is of copying the entries from these books into the *Journal* is called *Journalizing*. In the system of transactions about to be laid before our students, this process is performed at the end of each month. Instead of *Journalizing*, therefore, as formerly observed, it should be denominated *Monthly Posting* or *Sub-Ledgerizing*.

The first book which is journalized is the *Cash-Book*. In doing this, you make *Cash Account Dr. to Sundries* for all the *Receipts* of money during the month, and you then specify the names of all the *Accounts* on which Cash has been received, taking care to collect all the sums received on the *same account* in any case into one amount, for the sake of abridging the entries in the Ledger. If, however, Cash has been received on only one Account, then make *Cash Account Dr. to that Account*. Next, you make *Sundries Dr. to Cash Account*, for all the Payments of money during the month, and specify the names of all the *Accounts* on which Cash has been paid, collecting all the sums paid on the *same account* into one amount, as before; and if cash has been paid on only one Account, make *that Account Dr. to Cash Account*. In making up these entries for the *Journal*, *short loans* which are settled within the month are to be omitted; if not settled within the month, they must be extended in the proper columns, treated as regular transactions, and carried *to account* in the *Ledger*; all *balances of Cash* are to be omitted in Journalizing, because they are not real transactions, but only Arithmetical operations employed to check the accuracy of the *Cash Account*.

The next book which is journalized is the *Bill-Book*. In performing this operation, you make *Bills Receivable Dr. to Sundries* for all the Bills received, that is, which are drawn by you or transmitted to you during the month; you then specify the names of all the *Persons on whose Account* the bills have been received, at the same time collecting the sums of all those received on the *same person's* account into one amount, as done in journalizing the Cash Book; and if bills have been received on only *one person's* account, make *Bills Receivable Dr. to that person*. Next, make *Sundries Dr. to Bills Payable*, for all the Bills accepted during the month; then specify the names of all the *Persons on whose account*, the bills have been accepted and collect the sums of all those accepted on the *same person's* account into one amount as before; and if bills have been accepted on *only one person's* account, make *that person Dr. to Bills Payable*.

The next book to be journalized is the *Day-Book*. As the form of the entries in the *Journal* is similar to that of the entries in the *Day-Book*, there is in general, no other changes made upon the latter entries in transferring them from the one book to the other, than those which an abridgement or a condensation of entries by means of combination is naturally suggested to the Bookkeeper from their exact similarity. This abridgement or condensation is made in three ways: 1st. When the *same account* is *debited* to a number of different accounts at different dates of the same month; then make *that account Dr. to Sundries* for the amount of all the sums thus entered, specify the name of *each account*, and collect all the sums belonging to each account into one amount. 2nd. When a number of different accounts are *debited* to the *same account* at various dates of the same month; then make *Sundries Dr. to that Account* for the amount of all the sums thus entered, specify

the name of *each account*, and collect all the sums belonging to each account into one amount, as before. 3rd. When the *same* two accounts are found in several entries, having the same relation to each other as *Dr.* and *Cr.*, and at different dates of the same month; you then make a single entry of the whole, and collect all the sums of the different entries into one amount. In these various cases of abridgement or combination, arrange the dates and the sums which belong to each *Specified Account*, in the proper columns of the Journal and in the same line with the name of each account, placing the latest date in a line with the first name or word in the combined entry, and the whole amount of all the sums in a line with the name of the general *Dr.* or general *Cr.* in the entry. The commencement of each month in the *Journal* is distinctly shown by writing the name of the month and the year across the page, in a space extending from side to side. The dates are inserted in a vertical column to the left hand of each page; and parallel to this column, is one intended for the folio of the *Ledger* when the entries of each name and sum are posted into that Book; the numbers denoting the folios should be entered in this column of the *Journal* when these particulars are entered in the Ledger, *but not till then*; the absence of a folio figure in its proper column opposite the name of any account will then indicate that an entry has been omitted; and the absence of all such figures will indicate that the entries without them have not yet been *posted into the Ledger*.

LESSONS IN GREEK.—No III.

By John R. Beard, D.D.

GENERAL REMARKS ON THE NOUN, THE ADJECTIVE, AND THE PREPOSITIONS.

GENDER.

Nouns or Substantives are names of objects or things which exist in space or in the mind. There are, in Greek, three genders; the masculine, to denote the male sex; the feminine, to denote the female sex; and the neuter (Latin *neuter*, neither) to denote objects which are neither male nor female. The genders are distinguished partly by the sense and partly by the terminations of the nouns. There are terminations, for instance, which denote the feminine gender, as η; there are other terminations which denote the masculine gender, as ας in the first declension; and again, there are others which are of the neuter gender, as ον. This is a peculiarity to which we have nothing similar in English. Those who have studied Latin are already familiar with it. In regard to gender as denoted by the meaning, let the ensuing facts be committed to memory.

1. Of the *masculine gender* are the names of male beings, of nations, of winds, of months, and of most rivers.

2. Of the *feminine gender* are the names of female beings.

3. Of the *neuter gender* are the names of fruits, the diminutive in ον (except the female proper name ἡ Λεοντιον), the names of the letters of the alphabet, the infinitives, all words not declinable in the singular and the plural, and every word used merely as the sign of a sound.

4. Of the *common gender* are personal nouns which, like our *child*, may be applied to male or female; thus, Θεος may be used of a male or female divinity, and so be rendered either *god* or *goddess*.

This "common gender" is a grammatical phrase used to denote such nouns as are common to both males and females; that is, are sometimes masculine and sometimes feminine.

In Greek grammar it is usual to employ the definite article, in order to indicate the gender. The definite article, nominative singular, is ὁ, ἡ, το, *the*; ὁ is masculine, ἡ feminine, and το neuter; ὁ, therefore, put before a noun, intimates that the noun is of the masculine gender; ἡ, that the noun is of the feminine gender; and το, that it is of the neuter gender. If both ὁ and ἡ are put before a noun, it is done to show that the noun is of the common gender; thus ὁ ανηρ, *the man*, ἡ γυνη, *the woman*, το εργον, *the work*; ὁ, ἡ, Θεος, *the* (male or female) *divinity*; ὁ, ἡ, παις, *the child*, whether boy or girl.

NUMBER.

Number is a distinction of nouns founded on the circumstance whether they denote one or more. If a noun denotes one object, it is in the singular number; if a noun denotes more objects than one, it is in the plural number. The Greek tongue has a third number, called the dual, (Latin duo, *two*), which denotes two objects; thus, λογος is *a word* (singular); λογοι, *words* (plural); λογω, *two words* (dual); where ος is the singular termination, οι the plural termination, and ω the dual termination.

CASE.

These terminations, ος, οι, ω, undergo changes according to the relation in which they stand to a verb, to another noun, or to a preposition. Thus ος may become ον, and οι may become ους. Any word which is changed in form, to express a corresponding change in sense, is said to be inflected. Such inflexions or variations in the endings of nouns, are termed cases. There are, in Greek, five cases, namely,

1. *The Nominative*, the case of the subject; as *the father* writes, ὁ πατηρ γραφει.

2. *The Genitive*, the case indicative of origin, *whence*; as the *father's* son, ὁ του πατρος υιος.

3. *The Dative*, the case indicative of place, *where*; as to the father's *son*, τῳ του πατρος υἱῳ.

4. *The Accusative*, the case of the object, or *whither*; as the father loves *the son*, ὁ πατηρ τον υἱον αγαπα.

5. *The Vocative*, the case of invocation, or direct address; as *father*, love thy son, αγαπα, πατερ, τον υἱον.

In Greek, there is no ablative case; the functions of the ablative case are discharged, partly by the dative, and partly by the genitive. The nominative and the vocative are called recti, *direct*, the other cases are called obliqui, *indirect*.

Substantives and adjectives of the neuter gender have the nominative, the accusative, and the vocative alike, in the singular, the plural, and the dual.

The dual has only two case-endings; one for the nominative, accusative, and vocative, the other for the genitive and dative.

DECLENSION.

Declension is the classification of nouns and adjectives agreeably to the variations of their case-endings. There are, in Greek, three declensions; called severally, the first, the second, and the third declension. The learner will do well in regard to every noun and adjective, to ask himself, What is its nominative? What is its case? What is its number? What is its gender? What is its declension? For instance, τραπεζαις is from the nominative τραπεζα, *a table*, in the plural number, dative case, feminine gender, of the first declension. In order to practise and examine himself fully, he should also form or "go through" every noun, adjective, tense, mood, and indeed every word, again and again, according to the several models or paradigms given in the successive lessons.

THE ADJECTIVE.

An adjective denotes a quality. This quality may be considered as being connected with, or as being in an object, as the *red* rose, or as ascribed to an object, as the rose is *red*. In both cases the adjective in Greek, as in Latin, agrees in form, as well as in sense, with its noun. A change takes place in the adjective, conformably to the change in the signification; thus *a good man* is αγαθος ανηρ, but a good woman is αγαθη γυνη. Observe the ος of the masculine is for the feminine changed into η. Not only in gender, but in number and in case does the adjective in Greek, as in Latin, conform to its noun, *e. g.* ὁ αγαθος ανθρωπος, Latin, *bonus* homo; English, *the good man*; ὁ ανθρωπος εϛι αγαθος, homo *bonus* est, *the man is good*; ἡ καλη Μουσα, *pulchra* Musa, *the beautiful Muse*; ἡ Μουσα εϛι καλη, Musa *pulchra* est, *the Muse is beautiful*; το καλον εαρ, *pulchrum* ver, *the beautiful spring*; το εαρ εϛι καλον, ver *pulchrum* est, *the spring is beautiful*.

The adjective, then, like the substantive, has a threefold gender, the masculine, the feminine, the neuter. But many adjectives have only two terminations; one for the masculine and feminine, and another for the neuter: *e. g.*

Masculine.	*Feminine.*	*Neuter.*
ὁ ἡσυχος ανηρ,	ἡ ἡσυχος γυνη,	το ἡσυχον τεκνον.
the quiet man.	*the quiet woman.*	*the quiet child.*

here ἡσυχος remains the same with *ανηρ, man,* and *γυνη, woman,* being changed into *ἡσυχον* before the neuter *τεκνον, child.* An adjective of three terminations may be seen in this example:

Masculine.	*Feminine.*	*Neuter.*
ὁ αγαθος ανηρ,	ἡ αγαθη γυνη,	το αγαθον τεκνον,
the good man.	*the good woman.*	*the good child.*

Some adjectives have only one termination, as *μακροχειρ, long-handed, απατωρ, without a father.* In declension, adjectives, with a few exceptions, follow the forms of the substantives.

PREPOSITIONS.

Prepositions are words which go before nouns and show the relation which the nouns bear to the affirmation made in the sentence, or the member of the sentence in which they stand. Of prepositions I shall treat in full hereafter. At present some knowledge of them must be communicated in order to prepare the beginner for the following instructions. In the words

πορευομαι	προς	τον	πατερα,
I go	*to*	*the*	*father,*

the word *προς, to,* is a preposition.

In Greek, prepositions govern either one case, two cases, or three cases, and may accordingly be classified thus:

PREPOSITIONS GOVERNING

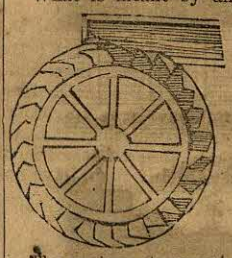
One Case.	*Two Cases.*	*Three Cases.*
	Genitive.	
αντι, in presence of, instead of	*δια*, through	*αμφι*, on account of
προ, before, for the good of	*κατα*, down	*περι*, on account of
απο, from	*ὑπερ*, for.	*επι*, upon
εκ, out of		*μετα*, with
ενεκα, on account of		*παρα*, from
		προς, for
		ὑπο, by.
	Dative.	
εν, in		*αμφι*, around
συν, with		*περι*, around
		επι, on
		μετα, against
		παρα, by, near (of rest)
		προς, at (of rest).
		ὑπο, under (of rest).
	Accusative.	
ανα, up	*δια*, because of,	*αμφι* & *περι*, about
εις, into	*κατα*, down, through	*επι*, to
ὡς, toward.	*ὑπερ*, over.	*μετα*, toward.
		παρα, by the side of
		προς, to (of motion)
		ὑπο, under (of motion).

A glance at this table will show that the case which in any example a preposition is connected with, has much to do in modifying its signification. Only by constant practice can the exact meaning and application of the several prepositions be known. The Latin student will, in this list recognise words with which he is familiar; thus *εκ* is the Latin *ex; εν* is the Latin *in; προ* is the Latin *pro; απο* is the Latin *ab; ὑπερ* is the Latin *super,* and *ὑπο* is the Latin *sub.*

LESSONS IN MECHANICS.—No. XXIV.

MINING OPERATIONS (*continued.*)

ONE of the greatest obstacles with which the miner has to contend is the percolation of water into the excavations, rising from the numerous springs through which the excavation has to be carried. It is sometimes easy to get rid of these waters by the formation of a gallery of *efflux,* which allows of their running off. This plan, although expensive at the outset, is in reality the most economical which can be adopted. But it is only under certain conditions that it can be applied. These conditions are when the workings are above the level of some valley into which the water may be allowed to flow. These adit levels, as they are called, are often several miles in length, and the slope is so gradual as to drain the mine to the lowest possible depth. When it is found impracticable to carry off the water by the adit level, on account of the depth of the workings, the only recourse is to mechanical agency. First of all, every precaution is taken, in excavating through the water levels, to keep the water out as much as possible by planking (*tubbing,* as it is called), and to collect the percolating water in wells, from which it may be the more readily lifted or pumped out to the natural adit level. The pumping machinery employed in the drainage of mines is constructed on a gigantic scale, and set in motion by that mechanical power which happens to be the cheapest in the locality of the mine. In the coal districts steam engines are, of course, the least expensive; but in districts where coal is not plentiful, horses, oxen, and even human labour is employed at the pumps. Hydraulic pressure is frequently employed, in the shape of overshot water mills.



What is meant by an overshot wheel is a wheel the circumference of which is occupied by a series of cavities, called buckets, into which the water is delivered by one or more spouts at the top of the wheel, and descends to the bottom. From the accompanying figure it will be seen that the buckets on one side of the wheel are erect, and will consequently become loaded with water; while those on the other side are inverted, and of course empty. It follows that the loaded side will preponderate, and cause the wheel to revolve.

The engines at present employed in the drainage of coal mines are the water-wheel, the water-pressure engine, and the steam-engine.

Mr. Darlington has given particular attention to the subject of water-pressure machinery for mines, and the methods of drainage, especially at Alport, in Derbyshire, have been found very successful. The first engine which he erected had a cylinder of fifty inches diameter, and a stroke of ten feet; the piston rod passed through the bottom of the cylinder, and formed a continuation with the pump rod, whilst the valve and cataract gearing was worked by a rod connected with the top of the piston, which gave motion to a beam and plug rod of about fifty tons on its area. The water was raised from a depth of twenty-two fathoms by means of a plunger, forty-two inches in diameter; and in very wet seasons it discharged into the adit 5,000 gallons per minute. Water was admitted only on the under side of the piston; and in order to avoid violent concussion in working, two sets of valves were employed, the larger being cylindrically shaped, twenty-two inches in diameter, and the smaller five inches in diameter. In making the up-stroke of the engine, the cylindrical valves admitted a full flow of water for about seven-eighths of the stroke, and then commenced closing; but at this stage the small valve opened, through which passed sufficient water to terminate the stroke. In this way the flow of water in the column was gradually slackened, and finally brought to a state of rest without interference with the machinery. The speed of the engine was regulated by sluice valves, one fixed between the engine and the pressure column, and the other upon the discharge pipe.

Various improvements have been made on this engine, not so much in point of construction as in simplicity, cheapness, and smoothness of action.

Open excavations, or working in the open air, of course presents the fewest difficulties, and occasions the least expense; but it is only for certain purposes and in certain conditions that these can be employed. Clay, sands, alluvial soils of diamonds, gold, oxide of tin, some iron ores, gypsum, limestone, building stones, &c., may all be worked in the open air. The iron mine near Whitehaven, and the Carclase tin mine in Cornwall, may be alluded to as illustrations of the fact.

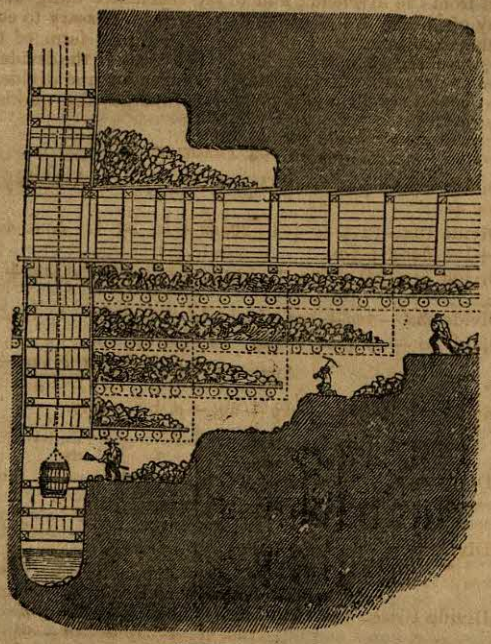
In subterranean, or underground mining, we have to consider the *preparatory work,* and the work of extraction.

The preparatory work consists in making a way for the miner to reach the ore. This must be accomplished by shafts and levels, or galleries, and in their formation a due regard must be had to ventilation, to freedom from incursions of water, and to the facility of removing the ore.

Supposing the vein form a very obtuse angle with the slope of a mountain, the miner commences operations by tunneling the mountain with a long level, or gallery, and piercing shafts above, according to the slope of the deposit. Supposing the stratum to be but little inclined to the horizon, placed beneath a plain, the first thing is to sink two shafts vertically, arriving at two points on the same slope; between these a gallery is excavated through the ore, but

the shafts themselves, where practicable, should not be allowed to pierce the ore, but be removed a little distance from it.

In mines of moderate width, as soon as the preparatory workings have reached the vein, it is usual to divide it into sections by the excavation of galleries, about ten feet below each other, and communicating with each other by pits. The excavations are disposed of in various levels, not unlike steps. The operations may be carried on two different ways—either attacking the ore from above



WORKING A MINE.

or from below. In either case, the step-like form is retained. The first is styled a *working*; the second, a *working in reverse*. By the first process the workman stands on the very substance of the vein, and works now gradually and easily; but as he works, heavy timber must be employed to sustain the rubbish, and the expense incurred is proportionately great. In the second, the position of the workman is more irksome, but his work is, if any difference, lighter, and less timber is employed.

LESSONS IN ALGEBRA.—No. VI.

DIVISION.

Rule for Signs in the Quotient.

100. In division, the same rule is to be observed respecting the signs, as in multiplication; that is, if the divisor and dividend are both positive, or both negative, the quotient must be positive: if one is positive and the other negative, the quotient must be negative. (Art. 81.)

This is manifest from the consideration that the product of the divisor and quotient must be the same as the dividend.

For if $+a\times+b=+ab$, then $+ab\div+b=+a$;
if $-a\times+b=-ab$, then $-ab\div+b=-a$;
if $+a\times-b=-ab$, then $-ab\div-b=+a$;
And if $-a\times-b=+ab$, then $+ab\div-b=-a$.

Examples.

46. Divide abx by $-a$. Ans. $-bx$.
47. Divide $8a-10ay$ by $-2a$. Ans. $5y-4$.
48. Divide $3ax-6ay$ by $3a$. Ans. $x-2y$.
49. Divide $6am\times dh$ by $-2a$. Ans. $-3mdh$.

101. *If the letters of the divisor are not to be found in the dividend, the division is expressed by writing the divisor under the dividend in the form of a vulgar fraction.*

Examples.

50. Divide xy by a.

Here, $xy\div a=\frac{xy}{a}$.

51. Divide $(d-x)$ by $-h$.

Here, $(d-x)\div-h=\frac{d-x}{-h}=\frac{x-d}{h}$.

This is a method of *denoting* division, rather than an actual performing of the operation. But the purposes of division may frequently be answered by these fractional expressions. For as they are of the same nature with other vulgar fractions, they may be added, subtracted, multiplied, or divided.

102. If *some* of the letters in the divisor are in each term of the dividend, the fractional expression may be rendered more simple, by rejecting equal factors from the numerator and denominator.

Examples.

52. Divide ab by ac. Ans. $\frac{b}{c}$.
53. Divide dhx by dy. Ans. $\frac{hx}{y}$.
54. Divide $ahm-3ay$ by ab. Ans. $\frac{hm-3y}{b}$.
55. Divide $ab+bx$ by by. Ans. $\frac{a+x}{y}$.
56. Divide $2am$ by $2xy$. Ans. $\frac{am}{xy}$.

These reductions are made upon the principle, that a given divisor is contained in a given dividend, just as many times as *double* the divisor is contained in *double* the dividend; *triple* the divisor in *triple* the dividend, and so on.

103. If the divisor is in some of the terms of the dividend, but not in all, those which contain the divisor may be divided as in Art. 92, and the others set down in the form of a fraction.

Examples.

57. Divide $ab+d$ by a.

Here, $(ab+d)\div a=\frac{ab+d}{a}=\frac{ab}{a}+\frac{d}{a}=b+\frac{d}{a}$. Ans.

58. Divide $dxy+rx-hd$ by x. Ans. $dy+r-\frac{hd}{x}$.
59. Divide $2ah+ad+x$ by a. Ans. $2h+d+\frac{x}{a}$.
60. Divide $bm+3y$ by $-b$. Ans. $-m-\frac{3y}{b}$.
61. Divide $2my+dh$ by $2m$. Ans. $y+\frac{dh}{2m}$.

104. The quotient of any quantity divided by *itself* or *its equal*, is evidently *unity* or one. Thus $\frac{a}{a}=1, \frac{x}{x}=1, \frac{abc}{abc}=1$, &c.

Examples.

62. Divide $3ax$ by $3ax$. Ans. 1.
63. Divide $6a$ by $4a+2a$. Ans. 1.
Divide $a+b-3h$ by $a-3h+b$. Ans. 1.
64. Divide $ax+x$ by x. Ans. $a+1$.
65. Divide $3ad-3d$ by $3d$. Ans. $b-1$.
66. Divide $4axy-4a+8ad$ by $4a$. Ans. $xy-1+2d$.
67. Divide $3ab+3-6m$ by 3. Ans. $ab+1-2m$.

105. If the dividend is *greater* than the divisor, the quotient must be *greater than a unit*: but if the dividend is *less* than the divisor, the quotient must be *less than a unit*.

EXAMPLES.

68. Divide $25a$ by $5a$. Ans. 5.
69. Divide $4x$ by $20x$. Ans. $\frac{1}{5}$

DIVISION BY COMPOUND DIVISORS.

Example 1. Divide $ac+bc+ad+bd$, by $a+b$.

Here, arranging the quantities for division as we do in common arithmetic, we have

Divisor $a+b$) $ac+bc+ad+bd$ ($c+d$ Quotient,
$ac+bc$, the first subtrahend.
$ad+bd$
$ad+bd$, the second subtrahend.

Here ac, the first term of the dividend, divided by a, the first term of the divisor (Art. 92,) gives c for the first term of the quotient. Multiplying the whole divisor by this term, we have the product $ac+bc$ which is to be subtracted from the two first terms of the dividend. The two remaining terms are then brought down, as in arithmetical division and the first of these divided by the first term of the divisor as before, gives d for the second term of the quotient. Then multiplying the whole divisor by d, we have the product $ad+bd$ which is to be subtracted from the remaining term of the dividend; as no remainder is left, the division is complete.

This operation suggests the following rule, which is founded on the principle, that the product of the divisor into the several parts of the quotient, is equal to the dividend. (Art. 91.)

106. RULE. *Arrange the terms so that the letter, which is in the first term of the divisor, shall also be in the first term of the dividend. If this letter is repeated as a factor, either in the divisor, or dividend, or in both, the terms should be arranged in the following order; put that term first which contains this letter the greatest number of times as a factor; then, the term containing it the next greatest number of times, and so on.*

2. Divide $2aab+bbb+2abb+aaa$ by $aa+bb+ab$.

If we take aa for the *first* term of the *divisor*, the other terms must be arranged according to the number of times a is repeated as a factor in each. Thus,

DIVIDEND.

Divisor $aa+ab+bb$) $aaa+2aab+2abb+bbb$ ($a+b$ Quotient,
$aaa+ aab+ abb$
$aab+ abb+bbb$
$aab+ abb+bbb$

In division, it is necessary that the *strictest attention* be paid to the *rules* for the *signs* in subtraction, multiplication, and division.

EXAMPLES.

3. Divide $xx-2xy+yy$, by $x-y$. Ans. $x-y$.
4. Divide $aa-bb$, by $a+b$. Ans. $a-b$.
5. Divide $bb+2bc+cc$, by $b+c$. Ans. $b+c$.
6. Divide $aa+xxx$, by $a+x$. Ans. $aa-ax+xx$.
7. Divide $2ax-2aax-3aaxy+6axax+axy-xy$, by $2a-y$. Ans. $x-ax+3aax$.
8. Divide $a+b-c-ax-bx+cx$, by $a+b-c$. Ans. $1-x$.
9. Divide $ac+bc+ad+bd+x$, by $a+b$. Ans. $c+d+\frac{x}{a+b}$.
10. Divide $ad-ah+bd-bh+y$, by $d-h$. Ans. $a+b+\frac{y}{d-h}$.

107. From the preceding principles and examples we derive the following rule.

GENERAL RULE FOR DIVISION.

1. Division, in all cases, may be expressed by writing the divisor under the dividend in the form of a fraction. 2. When the divisor and dividend are both simple quantities, and have letters or factors common to each; divide the co-efficient of the divisor by that of the dividend, and cancel the factors in the dividend which are equal to those in the divisor. 3. When the divisor is a simple, and the dividend a compound quantity; divide each term of the dividend by the divisor as before; setting down those terms which cannot be divided in the form of a fraction. 4. If the divisor and dividend are both compound quantities, arrange the terms according to Art. 106. 5. To obtain the first term in the quotient, divide the first term of the dividend by the first term of the divisor. Multiply the whole divisor by the term placed in the quotient; subtract the product from the dividend; and to the remainder bring down as many of the following terms as shall be necessary to continue the operation. Divide again by the first term of the divisor, and proceed as before, till all the terms of the dividend are brought down. If the signs in the divisor and dividend are ALIKE, the quotient will be $+$; if UNLIKE, the quotient will be $-$.

EXAMPLES FOR PRACTICE.

1. Divide $12aby+6abx-18bbm+24b$, by $6b$. Ans. $2ay+ax-3bm+4$.
2. Divide $16a-12+8y+4-20adx+m$, by 4. Ans. $4a-3+2y+1-5adx+\frac{1}{4}m$.
3. Divide $(a-2h)\times(3m+y)\times x$, by $(a-2h)\times(3m+y.)$ Ans. x.
4. Divide $ahd-4ad+3ay-a$, by $hd-4d+3y-1$. Ans. a.
5. Divide $ax-ry+ad-4my-6+a$, by $-a$.
Ans. $-x-d-1+\frac{ry+4my+6}{a}$
6. Divide $amy+3my-mxy+am-d$, by $-dmy$.
Ans. $\frac{x-a-3}{d}-\frac{a}{dy}+\frac{1}{my}$.
7. Divide $ard-6a+2r-hd+6$, by $2ard$.
Ans. $\frac{1}{2}-\frac{3}{rd}+\frac{1}{ad}-\frac{h}{2ar}+\frac{3}{ard}$.
8. Divide $6ax-8+2xy+4-6hy$, by $4axy$.
Ans. $\frac{3}{2}y-\frac{2}{axy}+\frac{1}{2a}+\frac{1}{axy}-\frac{3h}{2ax}$.
9. Divide $16abcx-12xyab+24abxd-36ahgb$, by $4ab$.
Ans. $4cx-3xy+6xd-9hg$.
10. Divide $21aaby+42cdxaa+14aaa-35aaaab$, by $7aa$.
Ans. $3by+6cdx+2a-5aab$.
11. Divide $12abxyz-6hdabxy+24xyabm$, by $3abxy$.
Ans. $4z-2hd+8m$.
12. Divide $3ax-36bx+42-72cx+30ax$, by $3x$.
Ans. $a-12b+\frac{14}{x}-24c+10a$.
13. Divide $40ab-4(x+y)+72+12(a+b)+48c$, by -4.
Ans. $-10ab+(x+y)-18-3(a+b)-12c$.
14. Divide $abx-cdx+8gx+x$, by $ab-cd+8g+1$.
Ans. x.
15. Divide $24xyz-36cd-48abcd$, by $12xyz-18cd-24abcd$. Ans. 2.
16. Divide $-ab-ad+ax(a+b)-42axy+ab$, by $-a$.
Ans. $b+d-x(a+b)+42xy-b$.
17. Divide $6am-10ah+20-12cd+17a$, by $-2am$.
Ans. $3+\frac{5h}{m}-\frac{10}{am}+\frac{6cd}{am}-\frac{17}{2m}$.
18. Divide $xyz+6x+2z-1+2xyz(a+b)$, by $6xyz$.
Ans. $\frac{1}{6}+\frac{1}{yz}+\frac{1}{3xy}-\frac{1}{6xyz}+\frac{1}{3}(a+b)$.
19. Divide $-6ac-12bc-6ab-10-2aabbcc$, by $6abc$.
Ans. $\frac{1}{b}+\frac{2}{a}+\frac{1}{c}+\frac{5}{3abc}+\frac{1}{3}abc$.
20. Divide $18abyx+16abx-20bbcm+24ab$, by $2b$.
Ans. $9ayx+8ax-10bcm+12a$.
21. Divide $16x-24+8a+84-20ax-a$, by -4.
Ans. $-4x+6-2a-21+5ax+\frac{a}{4}$
22. Divide $(x-y)\times(3a+x)\times b$, by $(x-y)\times(3a+x)$.
Ans. b.
23. Divide $41d\times(4-a)\times(x+y)$, by $(4-a)\times 41d$.
Ans. $x+y$.
24. Divide $-40xy+7abx-3ahmx$, by $-40y+7ab-3ahm$.
Ans. x.

25. Divide $20(ab+1)-60(ab+1)+50(ab+1)$, by $5a$.
Ans. $2b+\frac{2}{a}$.

26. Divide $6ax+2xy-3ab-by+3ac+cy+h$, by $3a+y$.
Ans. $2x-b+c+\frac{h}{3a+y}$.

27. Divide $aab-3aa+2ab-6a-4b+12$, by $b-3$.
Ans. $aa+2a-4$.

28. Divide $bb+3bc+2cc$, by $b+c$. Ans. $b+2c$.

29. Divide $3aaa-bbb$, by $2ab-b$. Ans. $4a^2+2ab+b^2$.

30. Divide $xxx-3axx+3aax-aaa$, by $x-a$. Ans. $x^2-2ax+a^2$.

31. Divide $2yyy-19yy+26y-16$, by $y-8$. Ans. $2y^2-3y+2$.

32. Divide $xxxxxx-1$, by $x-1$. Ans. $x^5+x^4+x^3+x^2+x+1$.

33. Divide $4xxxx-9xx+6x-3$, by $2xx+3x-1$.
Ans. $2ax-3x+1-\frac{2}{2x^2-3x+1}$.

The preceding rule may be thus summed up: divide every part or term of the dividend by the whole divisor, and collect the results as in addition; the sum will be the quotient.

ADDITIONAL EXAMPLES.

1. Divide ab^2c^3 by abc, and x^6y^5 by x^2y. Ans. bc^2 and x^4y^4.
2. Divide x^{m+n} and x^{m-n} each by x^n. Ans. x^m and x^{m-2n}.
3. Divide $a^3x^4-a^4x^3+a^5x^2$ by a^3x^2. Ans. x^3-ax+a^2.
4. Divide $2a^5-3a^4y-6a^3y^2$ by $3a^2$. Ans. $\frac{2}{3}a^3-a^2y-2ay^2$.
5. Divide $3a^5b^3-10a^4b^4+8a^3b^5$ by $3a^3b^3-4a^2b^3$. Ans. a^2b-2ab^2.
6. Divide $x^5-13a^2x^3+12a^3x^2$ by $x^2+3ax-4a^2$. Ans. x^3-3ax^2.
7. Divide $x^4-9x^2y^2+12xy^3-4y^4$ by $x^2-3xy+2y^2$. Ans. $x^2+3xy-2y^2$.
8. Divide $x^4-6x^3+5x^2+12x+4$ by x^2-3x-2. Ans. x^2-3x-2.
9. Divide x^2+a^2 by $x-a$. Ans. $x+a+\frac{2a^2}{x+a}$.
10. Divide $a^2-b^2+2bc-c^2$ by $a-b-c$. Ans. $a+b-c$.
11. Divide $81x^5+24x^2$ by $3x^2+2x$. Ans. $27x^3-18x^2+12x$.
12. Divide x^3+a^3 by x^2+a^2. Ans. $x-\frac{a^2x-a^3}{x^2+a^2}$.
13. Divide $10y^6-23ay^5+4a^2y^4$ by $5y^4-4ay^3+a^2y^2$.
Ans. $2y^2-3ay-2a^2-\frac{5a^3y^3-2a^4y^2}{5y^4-4ay^3+a^2y^2}$.
14. Divide $7x^4-26x^3+50x^2-74x+35$ by x^3-3x^2+5x-7.
Ans. $7x-5$.
15. Divide $2x^4-3x^3y+2x^2y^2+y^4$ by $x-4y$.
Ans. $2x^3+5x^2y+22xy^2+88y^3+\frac{353}{x-4y}$.
16. Divide x^5 by x^2+2x+1.
Ans. $x^3-2x^2+3x-4+\frac{5x+4}{x^2+2x+1}$.
17. Divide x^5 by x^2-2x+1.
Ans $x^3+2x^2+3x+4+\frac{5x-4}{x^2-2x+1}$.
18. Divide x^4-8x+7 by x^2-3x+2.
Ans. $x^2+3x+7+\frac{7x-7}{x^2-3x+2}$.
19. Divide $5x^4-6ax^3+2a^2x-a^4$ by x^2-ax+a^2.
Ans. $5x^2-ax-6a^2-\frac{3a^3x-5a^4}{x^2-ax+a^2}$.
20. Divide $x^3-3x^2v+3xv^2-v^3$ by $x^3-3x^2v+3xv^2-v^3$.
Ans. $x^3+3x^2v+3xv^2+v^3$.
21. Divide $3x^6-37x^4+35x^3+7x^2+2$ by x^3+3x^2-4x-2.
Ans. $3x^3-9x^2+2x-1$.
22. Divide $9a^3b+9a^2bc-4ab^3+4b^3c-9abc^2-9bc^3$ by $3a-2b+3c$. Ans. $3a^2b+2ab^2-2b^2c-3bc^2$.
23. Divide $a^3+3a^2b+3ab^2+2b^3+3b^2c+3bc^2+c^3$ by $a+2b+c$.
Ans. $a^2+ab+b^2+bc+c^2-ac$.
24. Divide $4x^5-x^3+4x$ by $2x^2+3x+2$. Ans. $2x^3-3x^2+2x$.
25. Divide $x-9x^3+8x^{10}$ by $1-2x+x^2$. Ans. $x+2x^2+3x^3+4x^4+5x^5+6x^6+7x^7+8x^8$.

LESSONS IN FRENCH.—No. LXXI.

By Professor LOUIS FASQUELLE, LL.D.

§ 77.—THE ARTICLE.—USE OF THE ARTICLE.

(1.) The article* must be used in French before every noun employed in a general sense, or denoting a whole species of objects; although in similar cases, the article is not used in English. Ex.:—

Les bienfaits peuvent tout sur une âme bien née. VOLTAIRE.	*Benefits are all powerful with a well disposed mind.*
*L'*honneur, aux grands cœurs, est plus cher que *la* vie. CORNEILLE.	*Honour is with magnanimous hearts more precious than life.*
La honte suit toujours un lâche désespoir. CREBILLON.	*Shame always follows a cowardly despair.*

(2.) The article is used in French, as in English, before a noun denoting a particular object, or taken in a particular sense:—

Le bonheur des méchants comme un torrent s'écoule. RACINE.	*The happiness of the wicked runs away like a torrent.*
*L'*arbrisseau le plus sain a besoin de culture. FABRE D'EGLANTINE.	*The healthiest shrub needs cultivation.*
Le moment du péril est celui du courage. LA HARPE.	*The time of peril is the time for courage.*

(3.) The article is used before the names of countries, provinces, rivers, winds and mountains:—

La France est bornée *au* midi par *les* Pyrénées et *la* Méditerranée; à *l'*est par *la* Suisse et *la* Savoie; *au* nord par *la* Belgique et à *l'*ouest par *l'*Océan. Ses principales rivières sont *la* Meuse, *le* Rhin, *la* Seine, *la* Loire, *la* Garonne et *le* Rhône.	*France is bounded on the south by the Pyrenees and the Mediterranean; on the east by Switzerland and Savoy; on the north by Belgium, and on the west by the Ocean. Its principal rivers are the Meuse, the Rhine, the Seine, the Loire, the Garonne and the Rhone.*

(4.) Those countries which take their name from their capital, or some other city within their boundaries, take no article:—

Naples est un pays délicieux.	*Naples is a delightful country.*
Venise était un état puissant.	*Venice was a powerful state.*
New York est un état sain.	*New York is a healthy state.*

(5.) The French use the article before titles prefixed to names:—

Le général Cavaignac.	*General Cavaignac;*
Le président Bonaparte.	*President Bonaparte.*

(6.) The article is also used before the names of dignities, of certain bodies, systems of doctrine, and with other words mentioned below:—

La monarchie,	*monarchy;*	A l'école,	*at school;*
Le parlement,	*parliament;*	Au collège,	*at college;*
Le gouvernement,	*government;*	Au marché,	*at, to market;*
Le christianisme,	*Christianity;*	Au lit,	*in bed.*
L'épiscopat,	*episcopacy;*	&c.	&c.
A l'église,	*at church;*		

(7.) Before the names of the seasons, and the following expressions:—

L'année prochaine,	*next year;*	L'automne dernier,	*last fall;*
L'année dernière,	*last spring;*	La semaine dernière,	*last week;*
Le printemps prochain,	*next spring;*	&c.	&c.

(8.) The names of several cities take the article. Those nouns have generally a meaning, and indicate often natural objects:—

Le Havre,	*Havre;*	La Rochelle,	*Rochelle;*
La Haye,	*The Hague;*	Le Détroit,	*Detroit.*

(9.) In speaking of the parts of the body or of the qualities of the mind, the French use the article in cases where the English use a possessive adjective or the indefinite article:—

Votre frère a *les* cheveux noirs.	*Your brother has black hair.*
Il s'est blessé à *la* main.	*He has hurt his hand.*
Charles a *la* mémoire excellente.	*Charles has an excellent memory.*

* The student will recollect that the French have only one article, *le*. The word *un* being by modern French grammarians very properly classed with the numeral adjectives.

§ Use of the Article before Words taken in a Partitive Sense.

(1.) A word, when used to denote an entire object or class of objects, is said to have a general sense; when, however, it is employed to indicate a *part* of any thing or class of things, considered in reference to the *whole*, it is said to have a partitive sense. Before a word taken partitively, the word *some* or *any*, is, or may, in English, often be employed. If, for example, I use the words *courage* and *wood*, abstractedly, I take them in the general sense: but if I say *give me wood, your brother has courage*, I use them in the partitive sense, that is, I ask for a part of that substance called *wood*, and attribute to your brother something of that quality called *courage*.

(2.) The article accompanied by, or in combination with, the preposition *de*, called by some grammarians the *partitive article* [§ 13, (10.)] is used before nouns taken in a partitive sense:—

Du pain et *de* l'eau lui suffisent.	*Bread and water are sufficient for him*; that is, *some bread.*
Apportez-nous *du* sel et *du* vinaigre.	*Bring us salt and vinegar*; that is, *some salt.*
Toujours la patrie a *des* charmes pour moi. La Harpe.	*My native land has always (some) charms for me.*

(3.) The preposition *de* only is used, when the noun taken in a partitive sense, is preceded by an adjective:—

Il possède *de* belles maisons.	*He possesses fine houses.*
Proposons-nous à nous-mêmes *de* grands exemples à imiter, plutôt que *de* vains systèmes à suivre. J. J. Rousseau.	*Let us propose to ourselves rather to imitate great examples, than to follow vain systems.*

(4.) When, however, the noun preceded by the adjective, is connected with it, and the two form a compound noun, that noun takes the article according to rule (2.) as,

Des jeunes gens; *des* grands hommes.	*Young people*; *great men (some).*
Heureux si de son temps, pour de bonnes raisons, La Mecédoine, eût eu *des* petites maisons! Boileau.	*Fortunate would it have been, if in his time (Alexander's) Macedon had had lunatic asylums.*

(5.) The preposition alone is used before a noun when it is preceded by a collective word or by an adverb of quantity:—

Une multitude *de* peuples.	*A multitude of nations.*
Beaucoup *de* personnes.	*Many persons.*
A quoi bon tant *d'*amis?	*Of what use are so many friends?*
Une seul nous suffit s'il nous aime. Florian.	*A single one suffices if he loves us.*

(6). The article, however, is used, when the noun preceded by a collective word, is limited by what follows. The words la plupart, *the most*; bien, *many*; and infiniment, *infinitely*, form also exceptions to the preceding rule:—

Un grand nombre *des* personnes que j'ai vues. Noel.	*Many of the persons whom I have seen.*
Il me reste peu *des* livres qui m'ont été donnés. Noel.	*I have few left of the books which have been given me.*
Les méchants ont bien *de la* peine à demeurer unis. Fenelon.	*The wicked have much trouble to remain united.*

(7.) The preposition is used alone before a noun placed after a verb conjugated negatively, but not interrogatively at the same time:—

Je ne vous ferai pas de reproches.	*I shall cast upon you no reproaches.*
L'on ne dit jamais que l'on n'a point *d'*esprit. Boursault.	*We never say that we have no wit.*
On ne fait jamais *de* bien à Dieu en faisant du mal aux hommes. Voltaire.	*We never can do good in respect to God, by doing evil to men.*

(8.) The commencement of rule (6.) will also apply to this sentence:—

Ne donnez jamais *des* conseils qu'il soit dangereux de suivre. Grault Duvivier.	*Never give advice which it is dangerous to follow.*

§ 79.—English Indefinite Article A or An.

The French numeral adjective un, *masc.*, une, *fem.*, answers to the English article *a* or *an* [§ 13, (4.) (11.).]

The restrictions as to its use are specified in the remarks on the article.

§ 80.—Repetition of the Article.

(1.) General rule. The article* is repeated before every noun and every word used as a noun, having a separate meaning:—

Le cœur, *l'*esprit, *les* mœurs, tout gagne à la culture.	*The heart, the mind, the manners, every thing improves by cultivation.*
Le père et *la* mère semblaient exciter leur petite compagne à s'en repaître la première. Buffon.	*The father and mother seemed to excite their little companion to feed upon it first.*

(2.) The article will, therefore, be repeated, when one of two adjectives united by the conjunction *et*, qualifies a noun expressed, and the other a noun understood:—

L'histoire ancienne et la moderne.	*Ancient and modern history*

that is, l'histoire ancienne et l'histoire moderne.

Les philosophes anciens et les modernes.	*Ancient and modern philosophers.*
Le premier et le second étage.	*The first and second stories.*

(3.) Should, however, the two adjectives qualify the same expressed word, the article must not be repeated:—

Le sage et pieux Fénélon a des droits bien acquis à l'estime générale Grault Duvivier.	*The wise and pious Fenelon has well established rights to general esteem.*
A ces mots, il lui tend le doux et tendre ouvrage. Boileau.	*At these words he presents to him the sweet and tender book.*

(4.) When two nouns are joined by the conjunction *ou*, and the second is merely a repetition or explanation of the first, the article should not be repeated:—

Les joues *ou* côtés de la tête du condor, sont couvertes d'un duvet noir. Buffon.	*The cheeks or sides of the head of the condor, are covered with black down.*
On distinguait parmi les nobles *les* palatins ou gouverneurs des provinces. J. J. Rousseau.	*They distinguished among the nobles the palatines or governors of provinces.*

§ 81.—Miscellaneous Remarks on the Use of the Article.

(1.) The article is not used before numbers placed after the names of sovereigns, to designate their order of succession [§ 26, (3.)].

Louis *dix-huit*, Charles *dix*.	*Louis the eighteenth, Charles the tenth.*

(2). The French put no article before nouns placed in apposition with, or explanatory of, other preceding nouns:—

Louis treize *fils* de Henri quatre, fut bien différent de son père.	*Louis the thirteenth, the son of Henry the fourth, was very different from his father.*
Le Tartufe, comédie de Molière.	*The Tartuje a comedy of Molière.*
Lamartine, célèbre poète et prosateur français.	*Lamartine, a celebrated French poet and prose writer.*
Je suis français, vous êtes américain.	*I am a Frenchman, you are an American.*

(3.) If the explanatory word be itself qualified or restricted by other words, the *un* is then placed before it:—

Cet homme est *un* Français d'une famille illustre, mais malheureuse.	*That man is a Frenchman, of an illustrious but unfortunate family.*
Ces messieurs sont *des* marchands de Lyon.	*Those gentlemen are merchants from Lyons*

(4.) Under the second rule of this Section may also be placed the words mentioned in § 76, Rules (11.) (12.) (13.) and (14):—

une montre d'or,	*a gold watch*;
un maître de dessin,	*a drawing-master*;
un moulin-à-vapeur,	*a steam mill*;
une chambre-à-coucher,	*a bed-room.*

(5.) Some exceptions to rule (2.) will be better explained by examples than by precepts:—

un magasin à foin,	*a hay-loft*;
une bouteille à vin,	*a wine-bottle,*

are a loft intended for hay, a bottle intended for wine, but not actually containing hay or wine.

un magasin *au* foin,	*a hay-loft*;
la bouteille *au* vin,	*the wine-bottle.*

That is, the loft actually used for hay, the bottle now used for wine.

* This rule applies to the determinative adjectives, mon, ton, son, ce, cet, &c.

un magasin *de* foin,	*a loft*	*hay*;
une bouteille *de* vin,	*a bottle* } *full of* {	*wine.*

(6.) Proper names of persons do not receive the article, unless it forms a part of the name; as, *Lebrun, Lamartine, La Harpe, La Fontaine;* as also in some gallicised Italian names; as, *Le Tasse,* Tasso, *Le Dante,* Dante, &c. An adjective, however, coming before proper names, is generally preceded by the article.

Le bon et naïf La Fontaine.	*The good and candid La Fontaine.*
Le pieux Fénélon.	*The pious Fenelon.*

(7.) It has been seen [§ 12, (1.) Examples] that the plural article is often placed in elevated style before the names of renowned individuals:—

Nous avons vu à la fois à la tête des escadrons impériaux *les* Murat, *les* Kellerman, *les* Lassalle, *les* Montorun. LE GENERAL FOY.	*We have seen at once at the head of the imperial squadrons, Murat, Kellerman, Lassalle, Montorun.*

(8.) Names of kingdoms and provinces, when preceded by the preposition *en*, take no article:—

En France, en Amérique.	*In France, in America.*

(9.) No article is placed after *en* preceding a noun used indeterminately; or after the word *ni* standing before a noun, which is the direct regimen of a verb, preceding the negative:—

Nous irons en voiture.	*We shall go in a carriage.*
Vous êtes en peine	*You are in trouble.*
Nous n'avons ni or ni argent.	*We have neither gold nor silver.*

(10.) The article is omitted before *plus* and *moins* in comparative sentences, where, in English, it would, in the corresponding place, be inserted:—

Plus une action est utile, plus elle est louable.	*The more useful an action is, the more praiseworthy it is.*

(11.) The article precedes *plus* and *moins* to express *comparison* in the highest degree, and agrees in gender with the noun:—

Votre sœur ne pleurait pas, quoiqu'elle fût *la* plus affligée de toutes ces dames.	*Your sister did not weep, although she was the most grieved of all those ladies.*

(12.) The article remains invariable when it stands before a superlative, in which, however, no direct comparison is intended:—

Votre sœur ne pleure pas lors même qu'elle est le plus affligée. NOEL.	*Your sister does not weep, even when she is most grieved.*

(13.) To give more force to the diction, the article is often omitted in a rapid enumeration of individuals:—

Citoyens, étrangers, amis, ennemis, tous le révèrent.	*Citizens, strangers, friends, enemies, all reverence him.*

ANSWERS TO CORRESPONDENTS.

A. B. C.: Evening classes, for the benefit of young men who are occupied in business during the day, are held at King's College, London. Regulations may be had on application at the college.—DICK TARLETON: The "Model Copy Books" will be of great advantage in improving your handwriting. They bear the name you mention, and consist of a course of eight books, issued at threepence each. They may be had at our office.—J. M. B.: We are right glad to hear that you have been stimulated to self-improvement. Emulation is the only stimulant we recommend. The school is, we believe, open to all. Your handwriting is capable of great improvement with a little care.—J. H.: Three years would afford ample time to a diligent student; the number of marks specified is about the ordinary average.—AN INDEFATIGABLE READER: A catalogue of the works published by Messrs. Cassell, Petter, and Galpin will be forwarded per post on receipt of a postage stamp.—E. H.: No; but full particulars will be furnished on application to the Registrar of the London University.—ONE WHO TAKES THE "POPULAR EDUCATOR:" You should consult some eminent oculist.—S.W. (Pontypool): Your sketch shows talent; persevere: copy, whenever it is possible, natural objects. A black lead pencil will be of more service to you than pen and ink.—VIGNOLA: Perspective will be included in our articles on Drawing. A series of articles on Practical Architecture will be given.—M. GALVIN: Follow the Lessons in the POPULAR EDUCATOR. Study French and German together, and "go a-head."—F. F.: The Maps given in the POPULAR EDUCATOR should be bound up with the work.—J. F.: Our "Lessons in Latin" may be obtained in a separate form.—J. C. S. L.: Right. "Nothing *comes* home to us like facts."—ELIZA has our sincere sympathy, and our best wishes for her success. We should advise her to consult the clergyman whose ministry she attends. Let her recognise, above all considerations of what she may be ultimately able to do, the present responsibility: wait patiently, and be faithful to duty, and leave the result with Him under whose wings she has come to trust.

IGNORAMUS.—*Fortune de la guerre,* or, properly, *la fortune de la guerre,* means "the fortune of war," or "'tis but the fortune of war."

C. D. K. (Durham).—Try "Cassell's English and French and French and English Dictionary;" the principles of pronunciation are given. Handwriting tolerably good, but capable of considerable improvement.

J. F.—The manor of Lambeth originally belonged to the see of Rochester, to which it had been granted, before the Norman Conquest, by a sister of Edward the Confessor; it was obtained in exchange for some other lands, by Baldwin, Archbishop of Canterbury, 1189.

J. B.—The term aerolite is given to those stony masses of matter which are sometimes seen to fall from the atmosphere. The term is derived from the Greek ἀήρ (atmosphere) and λίθος (a stone). A meteor is distinguished from an aerolite by the fact that it bursts in the atmosphere, and disperses in a vapour, like smoke; while the aerolite, which is supposed to be the fragment of a meteor, comes to the ground.

J. C. B. (Hoxton).—What is meant by the pores of a body is the spaces between the particles of matter which compose any object. No two particles of matter are supposed to be in actual contact with each other, and the openings, or interstitial spaces, are called the pores. In sponge, these pores are most conspicuous: they are least conspicuous in stone; but they are found in all things.

LAMARTINE.—Order the parts of "Cassell's Illustrated History of England" from your bookseller; there will be no difficulty whatever in your obtaining them. The POPULAR EDUCATOR when bound in double volumes is a little bulky, but not inconveniently so; for our own use we prefer the volumes bound singly. The maps which are issued with the EDUCATOR should be placed at the commencement of the volume. We are gratified by your kind acknowledgment of benefit received by our publication; we advise you steadily to persevere in the course you have marked out, and success is certain.

B. P. J.—Reputation is certainly not essential either to happiness or usefulness, but self-respect is most important. Maintain your self-respect; keep a spotless conscience; and do good to all around you, with supreme reference to Him in whom you live; thus will your character become healthful without giving a thought to it. The influence of enemies on a really sound character is healthful. A certain degree of recognition and praise does any man good, but too much of it is debilitating. It is well to hear what our foes will say of us—it is well to know the weight of their opposition: it awakens dormant energy, sharpens the intellect, makes a man in earnest. Do you go on: preserve your self-respect—bid defiance to your opponents; persevere, and success will crown your labour.

UN QUI A L'ENVIE D'ALLER EN FRANCE.—Perhaps you might obtain employment in the silk trade; your object is very laudable, but its practicability doubtful. It is still our opinion that for the present you are best where you are.—A BRIXTONIAN: No. We know of no cheap edition of "Burke's Speeches."—LAUNCELOT LONGSTAFF may safely commence Latin. Webster's is a capital pronouncing dictionary. Handwriting good. Arithmetic will be given. Study Latin in the morning and French in the evening, or the reverse.—J. N. S.: Our opinion is, of course, in favour of the system of Shorthand given in our EDUCATOR.—T. N. S.: There is no impropriety in what you are doing, provided you do not experience inconvenience from it.—A. J. HARRISON: Address a letter to the Registrar of the London University.—L. R.: Short.—DISCIPULUS: Rules are given in the "Latin Lessons" which cannot fail, if strictly followed, to lead you right. We are obliged for your good opinion.—J. R.: Your writing would be improved by more careful attention; it is highly important to write legibly.—J. T.: Declined with thanks.—A MUFF: In writing, the paper should be square with the table—that is, the bottom of the paper parallel with the front edge of the table.—D. S.: Hand-books to various systems of shorthand are published at a cheap rate. We should, however, recommend your waiting the issue of our Lessons in the POPULAR EDUCATOR.—CHAKRA will find ample information on the subject in the "Hand-book to the Civil Service," per post, 1s. 1d.—J. W. S.: Read over the "Elementary Lessons on English Grammar," but commence your regular study with the first of the Lessons by Dr. Beard. It is not necessary to commit them to memory, if you thoroughly master the principles which they teach.

LESSONS ON PHYSICAL EDUCATION.—No. V.

WALKING.

The exercise of *walking* is at once the most simple and the most natural in the human body. It produces action chiefly in the extensor and flexor muscles of the thighs and the legs, in a great number of the muscles of the trunk, and in the muscles of the shoulders more or less, according to the degree of the rapidity of their motion and projection before the body. In walking, the arms are employed to balance the body, and each is put in motion in a direction contrary to that of the leg which is on the same side of the body.

Fig. 19.

Fig. 20.

Fig. 21.

Fig. 22.

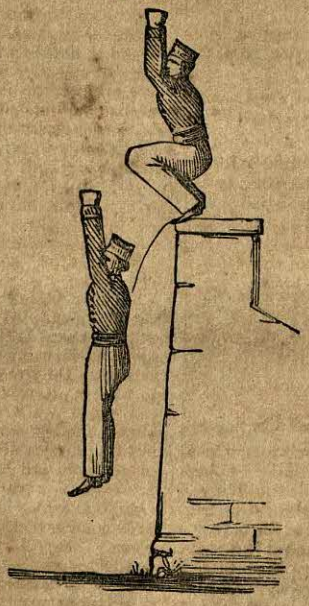


Fig. 23.

Walking upon an inclined plane, requires a greater degree of muscular exertion than walking upon level ground; and that of course in proportion to the degree of inclination or acclivity. In ascending a hill, the effort exerted acts in a direction opposite to the general tendency of heavy bodies; hence the body becomes curved, and its upper part is bent forwards; the action of the posterior muscles of the leg, and of the anterior muscles of the thigh, becomes very considerable; and the circulation and respiration are speedily accelerated by the force of the contractions of the muscles. In descending a hill, an effort is exerted to preserve the body from obeying the law of gravity, by bending it in the contrary direction to that of ascending. In order to counteract the natural tendency to throw the centre of gravity of the body forwards, the trunk is thrown backwards, by strongly contracting the sacro-spinal mass, and the muscles of the neck, by bending the knees, and by taking much shorter steps than usual. These different postures in walking are exemplified in the adjoining illustration, fig. 19, where the difference in the positions of the centre of gravity is seen in the vertical straight line to the right in each figure, whether ascending or descending.

Fig. 24.

Fig. 25.

Fig. 24.

The exercise of walking not only ensures the action of a great number of the muscles by alternate contraction and expansion, but it produces the most favourable effects on all the organs of the body, as well as on their different functions, by the general and pleasing motion which is experienced by the whole frame, or animal system. Walking is the graceful and majestic motion which enables the body to move from one place to another without disturbing the equilibrium of the parts in action. Walking is effected by an alternate succession of the motion of the lower extremities; the point of the toe is slightly lowered and turned a little outwards in taking a step,

the upper part of the leg being extended without rigidity, and the trunk kept free from motion, but inclined gently forward; the arms are allowed to hang naturally by the sides without any muscular action, and the fingers are closed; the right arm, and to a greater extent its fore-arm, are put forward with the left leg and foot, and in like manner the left arm with its fore-arm, with the right leg and foot; and so on alternately. Few people, even of those who are well formed, possess the boldness and the dignity requisite for a proper style of walking; it is necessary therefore to learn to walk like men.

Exercise 7. The words of command are:—

1. *Forward!*
2. *Ordinary step!*
3. *Walk!*

At the word of command, *Walk*; each pupil starts with the right foot, and performs the motions of walking, which we have described in the preceding paragraph. All the steps should be equal in length and in velocity; the length of the step being of course proportional to the height and the shape of the pupil; as to the velocity of the steps, they should be gradually increased in this exercise, from 76 to 140 per minute. It is not necessary in these lessons to give instructions in the back step, the oblique step, the side step, &c. Teachers of gymnastics can supply the deficiency to those who require farther instructions.

RUNNING.

The exercise of *Running* held the first rank in the gymnastics of the Greeks and the Romans. It commenced the memorable games called *Olympic*, the names of which alone have escaped the ravages of time. This exercise is as natural as that of walking; and the savage, deprived of the means of locomotion with which civilized nations are furnished, astonishes the traveller by the rapidity of his running, whether it be in the attack and pursuit of his prey, or in his flight from impending danger. Running is coeval with the first race of men. Man then exercised it no doubt in preserving himself from the teeth of ferocious animals. After the flood also, he exercised it in the chase after the weaker animals whether for food or sport; and Nimrod the Babylonian is described as the "mighty hunter" of ancient times. Running was held in such high estimation among the Greeks, that Homer, in his Iliad and Odyssey, and Pindar in his Odes, seem to delight in their description of this exercise by the praises which they lavish upon the runners. Homer indeed applies to the hero of the Iliad, the redoubtable Achilles, epithets which indicate his *swiftness of foot*, and surely he would not tarnish the glory of his hero by attributing to him a quality which was not held in the very highest estimation. In our day, however, such a quality in a soldier would only imply a tendency to fly at the sight of battle; so much do manners change and the people change with them.

The effects of running upon the animal system differ according to the velocity of the runner, the length of his steps, the nature of the ground, and the duration of the exercise. Its principal effect is to increase the contraction of the muscles, and consequently the circulation. In rapid running, the respiration is very much affected, the chest undergoes its greatest development, and receives the largest possible quantity of air; after the exercise has been conducted with great force, the breathing becomes short and quick, the heart beats violently, and all the natural functions become too active to admit of continuance in their excited state. Running, properly directed as an exercise, gives a favourable impulse to all the viscera of the frame, and disposes them to perform readily all their natural operations; and has a direct and powerful influence on the respiratory organs, which it wonderfully developes. But when running is performed with violence, it produces deep impressions of a serious nature; and therefore it is absolutely necessary that this exercise should be conducted by the pupils under management, in a very slow and progressive manner, and with great caution as to its duration and velocity.

Foot races are two-fold, that is, the exercises of the pupils are intended to produce habits either of resistance or of velocity, either of duration or of speed. Those of duration consist in running an indeterminate distance with a velocity equal, uniform, and measured. Those of velocity, consist in running an appointed distance with the greatest possible speed.

In commencing the exercises, the pupils are arranged in one or more lines at the *full distance* from each other.

Exercise 8. The words of command are:—

1. *Uniform Running!*
2. *In position!*
3. *Start!*

At the words *In position*, the pupil stands with the left foot about twelve inches in advance of the right, bending slightly forward on the leg thus placed in advance, and stretching without stiffness the hind leg; he then gently bends the body forwards, keeping the shoulders back, and the elbows behind the trunk; the hands closed, and the nails towards the body at the height of and near to the haunches. At the word *Start*, the pupil puts the right leg forward, treading lightly on the toe or fore-part of the foot, so as to give lightness and elasticity to the step; the fore-arms and the fists are thrown gently and alternately forwards, so that the left arm performs its motion with the right foot, and *vice versa*. The trunk moves forwards without any motion of its own, and the head is kept upright. He puts the left leg forward in the same manner, and thus carries on the exercise alternately with each of his limbs; in short, the most perfect accordance must exist in the motions of the upper and lower extremities, fig. 20. The pupils are thus made to perform races in a straight line, in a curve, in various directions, winding, at right angles, zig-zag, &c.

LEAPING.

The exercise of *leaping*, like that of *running*, was included by the ancients among the exercises of the *Palæstra*. It made a part of the *Pentathlon*, a name which the Greeks gave to the union of *five exercises* which manifested at once *power*, *velocity*, and *agility*; these were *leaping*, *throwing*, *running*, *wrestling*, and *boxing*. This was a mixture of exercises denominated *heavy* and *light*; and no one received the prize due to the *Pentathlos*, unless he excelled in all of them. The Greek *athletæ*, champions or prize-fighters, who practised leaping, performed the exercise not only with light weights in their hands, but they placed heavy weights sometimes on their heads, sometimes on their shoulders; and sometimes they affixed them to their feet. Others, no doubt with the intention of learning to preserve their equilibrium, leaped upon leathern bottles full of wine, and well oiled. To travel up an inclined plane, without edge or border on either side, upon a ball or sphere, was an exercise in preserving equilibrium, reserved for more modern times.

There are various kinds of leaping exercises; we only describe here the most useful; *horizontal leaping*; *leaping upwards*; *leaping downwards*. The other exercises in this department are only combinations of these three. In general, leaping is effected by the flexure or bending of the lower extremities, and then their sudden and violent extension, the upper extremities performing only a secondary part in the operation. It is in the exercise of *leaping with the pole*, that the arms become more active; and then their energy is as much called into play as that of the legs.

Exercise 9.—The words of command are:—

1. *Horizontal Leaping!*
2. *One!*
3. *Two!*
4. *Three!*

At the *first* words of command, the pupil brings his feet together, particularly at the toes. At the word, *One*, he slightly bends his legs, and throws his fists forwards to the height of his shoulders, in the direction in which the leap is to to made; he then raises himself erect. At the word, *Two*, he repeats the same movement. At the word *Three*, he still performs the same movement, but instead of raising himself erect, this time, resting his whole weight on the points of his feet, he, by a sudden and violent extension of his arms and legs (or leap), clears the appointed space, lights upon his toes, throws himself down upon all the joints of the lower extremities, quickly raises himself up, and replaces his arms in their natural position. In this exercise the arms should be thrown forward, before putting the legs in motion, and taking the spring upon the toes. Fig. 21.

The *downward leap* is one of the most useful, difficult, and

dangerous of all. It requires much application and study, and must be performed at first, with vertical distances, or depths, very small, and differing from each other by insensible degrees; and the pupil should not be allowed to perform the greater leaps until he has been well accustomed to the smaller. As a general principle, a pupil should never be made to leap a greater vertical distance than three times his own height.

EXERCISE 10.—The pupil being raised on a bank, a table, a platform, &c., the words of command are:—

1. *Downward Leap!*
2. *One!*
3. *Two!*
4. *Three!*

At the *first* word of command, the pupil closes his fingers, and brings his toes together. At the word, *One*, he bends himself down as low as possible, raises his fists as high as he can, and then resumes his original position. At the word, *Two*, he repeats this movement. At the word, *Three*, he begins the same movement, and instantly, by a sliding motion, causes his feet to leave the place where they are resting; he now descends the vertical distance, at the same time raising his hands above his head as fast as he reaches the ground. During his descent, his body and legs must resume the position of a straight line, in order that he may be ready to bend his legs again whenever his feet touch the ground. At this instant, his hands having reached their highest elevation, the pupil throws himself down upon all the joints of the lower extremities; he then instantly raises himself, and replaces his arms in their natural position. During the leap downwards, the body and the legs take successively three positions: a complete flexure at the moment of starting, an extension of the trunk and legs in a straight line, and a flexure of the lower extremities when the feet reach the ground. Whatever the height or depth of the leap may be, the motion of the flexure or bending of the legs is always the same; as to the power or strength of flexure, this must always be kept proportional to the depth of the leap. Fig. 22. The pupil must be made to understand this rule, in order to enable him to avoid the accidents which might arise from this exercise, so important and so difficult in a physical point of view.

EXERCISE 11.—The upward leap. The words of command are:—

1. *Leaping upwards!*
2. *One!*
3. *Two!*
4. *Three!*

At the *first* word of command, the pupil shuts his fingers and brings his toes together. At the word, *One*, he bends his legs and throws his fists to the height of his shoulders in the direction in which the leap is to be made. At the word, *Two*, he repeats this movement. At the word, *Three*, he performs the same movement as that directed in No. 4 of Exercise 9. The force of the motion of extension in the legs must be quick and sudden, and proportional to the height to be cleared. Fig. 23.

EXERCISE 12.—Horizontal leap with a run. In the performance of this exercise the pupil is placed about fifteen paces from the place where he is to take the leap. He then practices individually and without the word of command. He takes the position previous to the run, starts quickly from that position, and reaches the place which he must clear; he next presses firmly, but instantaneously on the ground with that foot which first reaches the point of starting, and throws himself forwards, raising at the same time his fists as high as his shoulders, and in the direction of the leap; he thus clears the space, and reaches the ground, first bending the lower extremities as before, then rising up, and assuming his first position. Fig. 24.

EXERCISE 13.—Upward leap with a run. This exercise is performed in the same manner as the preceding one, with this difference, that the direction of the fists must be the same that the body is to take in leaping, in order to clear the obstacle. Fig. 25.

LESSONS IN ENGLISH.—No. LXI.

By JOHN R. BEARD, D.D.

THE VERB:—*May, Can, Must, Ought.*

THE verb *may* from the German *mögen* indicates *permission*. A mistress says to her servant, "having done your work, you may go out for the day." In the same way a boy reports to his schoolfellow, "I may (that is I am permitted to) go home after I have said my Latin." I subjoin other instances.

The idea of permission may be so reduced as to leave merely the notion of a general dependence on outer objects. *May*, however, always retains at least a latent reference to something beyond one's self. In the following example this reference is found:—

In the docks at Liverpool you may see ships of all nations.

This use of *may* is very near to *can*, that is to imply *ability* or power; as is seen in the following:—

"It may be true, but I can hardly believe it."
"Will it rain to day?" "I cannot tell, it may."

Yet the tacit reference to external causes is not lost.

May is also employed in the expression of *a wish*; e. g.

"May a thousand blessings come on your family."

The past tense of *may* is *might*, in German *möchte*. The idea of permission more nearly disappears in *might* than in *may*. I subjoin some exemplifications of its use:—

You might aid me, if you would.
A visit to Madeira might restore his health.
They wished I might succeed.

It is hardly correct to describe *may* as a present and *might* as a past tense. "I might go, if he came" "I may go, if he comes"—here *might* implies the present as much as *may*. Both indeed denote a present possibility, but a future and contingent act. "I may go" "I will go" are forms pretty nearly free from conditions of time or manner, that is, they approach to absolute forms. The other epithet, namely "conditional," is more suitable than the term past.

Absolute.	*Conditional.*
I may &c.	I might &c.

In what are called "the Auxiliary verbs," namely *shall, will, may, can*, &c., the third person singular has no specific termination; e. g.

He shall, he will, he may, he can love.

May and *might* enter into combination with parts of *be* and *have*, as well as with parts of ordinary verbs; e. g.

I may have; I might have; I may be, I might be; I may love; I may have taught; I might have sung; I might read.

Can, from the German *können, to know, to be able*, and connected with our *cunning*, that is skill, and our *king*, that is the man who has power in virtue of his *knowledge*, signifies inherent power, specially arising from knowledge.

The idea is generalised; any internal power or faculty, and so instinctive faculties, are expressed by *can*; e. g.

The bird can fly. The dog can bark. The fish can swim.

Still farther is the idea carried so as to embrace ability of any kind; e. g.

I can shoot that deer. The child can walk alone.

Of even inanimate objects may the term *can* be used, though by no means generally; e. g.

It can not be that you have committed a theft.
That can not be true. Can gold be melted?

The absolute form *can* becomes in the conditional form *could*; e. g.

He could, if he would, disclose the whole matter.

Can and *could* unite with *be, have*, &c., as in,

I can be; I can have been; I could be; I could have been; I can relate; I could relate.

Could is employed in the way of entreaty, so as to soften a request; e. g.

Could you let me see the newspaper?

These verbs, namely *be, have, can, may, shall, will*, are commonly called Auxiliary verbs, since by their aid (in Latin *auxilium*) the ordinary verbs are formed or conjugated.

If you will look a little more closely into the import of these that are called auxiliary verbs, you will find that like *must* and *let*, they do not express an act of their own, so much as qualify the act expressed in another verb; e. g., I may love, I can love, I must love. As then their function is to qualify the verbs with which they are connected, they may receive the name of qualifiers, or qualifying verbs; they might be called modal verbs, since they express the mode or manner of an action.

The verb *must* has but this one form. Coming from the German *müssen*, *must* denotes necessity; e. g.

"Can you sing?" "Yes, but I *must* not, my medical man has forbidden me to sing."

Must combines with parts of *be* and *have*; e. g.

The child must be well educated. The man who did that must have been mad. The ship must be put about.

Let, from the German *lassen*, *to allow* or permit, presents its primitive and independent force in the phrase *to let*, as, "this house (is) to let."

Let signifying to allow is illustrated in this example.

"Pharaoh said, I will let you go." (Exod. viii.)

Let may express a request; e. g.

"Let me not wander from thy commandments." (Ps. cxix, 10.)

Let also expresses a command; e. g.

"Let that bird alone."

Thus *let* comes to aid in forming what is commonly called "the imperative mood" or the mood of command; e. g.

"Let him go" that is "allow him to go."

The imperative mood is commonly given thus,

	Singular.	*Plural.*
1.	Let me speak	let us speak
2.	Speak thou	speak ye
3.	Let him speak	let them speak

Ought is a past form of the verb to owe.

To owe formerly signified to be under an obligation; e. g.

"A son owes help and honour to his father." *Holy Day.*

In its original meaning *owe* (the same as own) meant *to have, to possess.* What a man has or possesses is his own, hence *to owe* came to signify what is now signified by our verb *to own.* A general sense of obligation is now expressed by *ought*, as "you ought to go," the present form in this acceptation having become obsolete.

Dare, connected with the German *dürfen*, has for its past form *durst*, also *dared*.

Dare qualifies the verb before which it stands no less than *may*; e. g.

I may say	I can say
I dare say	I must say

Nor does *I will say* essentially differ from the other forms. Indeed the forms may be arranged in a rising scale, extending from ability to determination; thus,

I *can* say	I *must* say
I *may* say	I *will* say
I *dare* say	

Can, may, dare, must, will, are independent verbs in each case governing the infinitive *say*.

Exercises for Parsing.

——— They are worn, lord consul, so
That we shall hardly in our ages see
Their banners wave again.—*Shakspeare.*

Sic. Pass no further.
Cor. Ha! what is that?
Bru. It will be dangerous to go on.—*Shakspeare.*
Sen. Tribunes, give way; he shall to the market-place.
Bru. The people are incens'd against him.
Sic. Stop,
Or all will fall in the broil.—*Shakspeare.*
Cor. It is a purpos'd thing and grows by plot,
To curb the will of the nobility:
Suffer it, and live with such as cannot rule,
Nor ever will be ruled.—*Shakspeare.*

Cor. Tell me of corn!
This was my speech, and I will speak't again;—
Men. Not now, not now.
Sen. Not in this heat, Sir, now.
Cor. Now, as I live, I will.—*Shakspeare.*
Cor. Choler!
Were I as patient as the midnight sleep,
By Jove, 'twould be my mind!
Sic. It is a mind
That shall remain, a poison, where it is.
Not poison any further.
Cor. Shall remain!—
Hear you this Triton of the minnows? mark you,
His absolute shall?
Com. 'Twas from the cannon.
Cor. Shall!
O good but most unwise patricians, why,
You grave but reckless senators, have you thus
Given Hydra here to choose an officer
That with his peremptory shall, being but
The horn and noise o' the monsters, wants not spirit
To say he'll turn your current in a ditch
And make your channel his?
* * * * * * *
And such a one as he, who puts his shall
His popular shall, against a graver bench
Than ever frown'd in Greece.—*Shakspeare.* (Coriolanus iii. 1)

1. *Ward.* We do no otherwise than we are willed.

Gloces. Who willed you? or whose will stands but mine?
There's none protector of the realm but I.
Break up the gates, I'll be your warrantize:
Shall I be flouted thus by dunghill grooms?—
Shakspeare. (1 Henry vi. 1, 3.)

His listless length at noontide would he stretch.—*Gray.*

Nicodemus said, how can these things be? (John iii.)

How can I do this great wickedness and sin against God? (Gen. xxxix.)

"I know not how long I shall owe (have) it." (*Beaumont and Fletcher.*)

"The ower (owner) of heaven." (*Bishop Hall.*)

"The one ought five hundred pence." (*Bible* 1611.)

To raise desert and virtue by my fortune,
Though in a low estate, were greater glory,
Than to mix greatness with a prince that owes
No worth but that name only.—*Massinger.*

Great joy was made that day of young and old
And solemn feast proclaym'd throughout the land
That their exceeding merth may not be told.—*Spenser.*

Yet lives there one, whose heedless eye
Shall scorn thy pale shrine, wandering near?
With him, sweet bard, may fancy die,
And joy desert the blooming year.—*Collins.*

"If I preche the gospel glorie is not for me, for
Nedeliche (of necessity) I mote (must) doon (do)
It, for wo to me if I preche not the gospel.—*Wickliffe.*

"Can the rush grow without mire?" (Job viii. 11.)

"The secret cause which brought Agesilaus to consent was the greatness of the debt which he ought."—*North*; *Plutarch.*

"This we deny that the authority of such an extraordinary spirit was ever owned."—*South.*

"I suppose that the lightness which is remarked in the coins of Edward VI. was owing to the embezzlement of this person."—*Walpole.*

"Now help me, lady, sith (since) ye may and can."—*Chaucer.*

"Where then shall hope and fear their objects find?
Must dull suspense corrupt the stagnant mind?
Must helpless man, in ignorance sedate;
Roll darkling down the torrent of his fate?
Must no dislike alarm, no wishes rise,
No cries invoke the mercies of the skies?"—*Johnson.*

"The folk wol wene (know) that thou for cowardise
Thee fainest sick, and that thou dar'st not rise."—*Chaucer.*

"And the fear of God fell upon that cyties that were rounde about them, that they durst not followe after the sons of Jacob."—*Bible* 1551. *Genesis* xxxv.

Words with their proper prepositions.

N.B. Continue to make each word into a simple sentence.

	F. R.
Fall under	G. fallen, *to fall.*
Familiar to, with	L. famulus, *a house slave.*
Fawn on	F. faonner, *to fawn.*
Fearful of	G. fürchten, *to fear.*
Feed on or upon	G. weiden, *to feed.*
Fight with	G. fechten, *to fight.*
Filled with	G. füllen, *to fill.*
Fond of	
Fondness for	
Foreign to	L. foras, *out of doors*, abroad.
Founded on a rock, in truth	L. fundare, *to found.*
Free from	G. frei, *free.*
Friendly to	G. freund, *friend.*
Frown at	
Fruitful of, in	L. fructus, *fruit.*
Full of	G. füllen, *to fill.*
Give to	S. gifan, *to give.*
Glad of, at	S. glad, *glad.*
Glance at, upon	G. glanzen, *to shine.*
Glow with	S. glowan *to glow*
Grapple with	E. grip, *to hold.*
Grateful to a person, for a favour	L. gratus *pleasing.*
Grieve at, for	F. grever, *to aggrieve.*
Guard against	F. garder, *to keep.*
Hanker after	
Happen to, on	
Healed of	G. heilen, *to heal.*
Hinder from	G. hindern, *to hinder*
Hiss at	
Hold in, of, on, from.	S. healdan, *to hold.*

SKETCHES FOR YOUNG THINKERS.

(*Continued from page* 269.)

We are not of those who rail against riches, and are clamorous for the annihilation of social distinction; we only protest that gold, coronets, and jewellery do not make the man, and that mental excellence is entirely independent of all such possessions. Enough on the head of mental independence, as one of the chief characteristics of intellectual excellence. This independence may exist without *education*, but we pass now to show that *education*, as another trait of mental excellence, is not regulated by social position. An uncultivated mind is to be deplored, wherever it may exist. Where there might be strength, symmetry, and beauty, there is weakness, disproportion, and deformity. Poverty may indeed contribute largely to the noncultivation of the intellectual powers, but we will have an opportunity of showing that it cannot altogether prevent their development and successful culture. That man is deserving of honour who has diligently trained his mind and filled it with useful treasures, amid the labours, turmoils, and anxieties incident to a life of poverty,—who has risen early, and trimmed his lamp at midnight, that he might feast on the luxuries of literature, or revel among the discoveries of science, —who has despised the vanities, pleasures, and excitement of a frivolous world, that he might hold uninterrupted converse with "the mighty dead, who rule us from their urns." Such a man carries a *power* along with him. He is appealed to in extremity,—he is superior to circumstances which would harass and dispirit thousands of less noble minds. Inured to hardships, he knows nothing of the soft indulgences and enervating felicities attendant upon a life with the thoughtless, the gay, and fashionable, who live for temporary enjoyment. Such men are generally, though not invariably, *self-educated.* Many and fierce have been the phillipics denounced against self-education, by some who have been favoured with more felicitous circumstances under which to acquire their own learning. We cannot join in this denunciation. We render honour to whom honour is due; and no small share is due to the humble student whose social disadvantages prevent him from treading the Academic grove, and listening to the profound prelections of the learned professor. Self-education is a manifestation of mental superiority; only noble and courageous spirits will succeed in it; they have not the stimulus which necessarily attends a collegiate life; there is no formal examination, no goading rivalry, no tempting prize; there is no time in such life when "Greek meets Greek," and hence the "tug of war" in such a case has no practical meaning. There must be, consequently, some powerful motive ever present in the mind of the private student. A noble ambition must animate him, and no common energy must be his who ventures into single combat with the intellectual chiefs, who, by the might of mind, have enthroned themselves as emperors of the domains of thought, and whose heads are enwreathed with the chaplets which willing contemporaries or admiring posterity has cheerfully awarded! While we laud every effort at self-cultivation, we do not run to the opposite extreme and condemn those who are regularly trained in college or university; for even there knowledge will never be acquired by miracle, and he alone will be ultimately successful who is content to labour with diligent perseverance. Many poor men have by the benevolence of patrons been placed under collegiate tuition, and fought their way through opposition, envy, and difficulty of every kind, until they have placed themselves beyond the power of their jealous and chagrined competitors. While others, by their superior social circumstances, have been enabled to enjoy all the luxuries of life and attend to all the calls of fashionable society, the poor protegé or self-supporter has been forced into studious retirement, and has there built up a mental force, incomparably more valuable and useful than the transient applause or evanescent excitement of haughty or fashionable circles.

One very striking instance illustrative of those principles is given in the history of *Erasmus.* This man had to cope with no ordinary difficulties, and the issue of his struggles proves, in a most unanswerable manner, that intellectual excellence is independent of social position. "At the age of fourteen, he fell into the hands of dishonest guardians," who, after wasting his patrimony, compelled him to enter a monastery. Through his connexion with the bishop of Cambria, to whom he served as Latin secretary, he escaped the horrors of a monastic life, but in exchange, he entered upon a career of poverty and severe privation, wandering homeless and almost penniless in France, the Netherlands, and England. Still he panted after knowledge; he was an ardent admirer of the Greek language, a language less popular then than it is now, for in his day there were not wanting those who assumed the name of Trojans, as indicative of their hostility to Grecian literature; the established clergy were horrified at this innovation, and condemned the study of Greek, they clung with pertinacity to the stern Roman classics, and anticipated with grievous misgiving the introduction of the rival language. But time has proved that both can be cultivated with advantage; that Cicero, Horace, and Virgil will not be disgraced by the society of Demosthenes, Pindar, and Homer. So thought the humble and destitute Erasmus; for, writing from Paris, he says:—"As soon as I get money I will buy first Greek books, and then clothes." Who does not see in this extract a desire for learning, which the cold hand of poverty could not annihilate. The money-lover affects great contempt for such a declaration; in his barbarous ignorance he demands the *cui bono* of such a choice, not knowing the thrilling joy of acquiring intellectual opulence, and its intrinsic superiority when compared with "filthy lucre." We can imagine something of the delight which would agitate the bosom of Erasmus, as he pondered the profound writings of the philosophic Plato, and indulged in his "longing after immortality;" or farther, he might be so overpowered, as to exclaim with Cato:—

"It must be so,—Plato, thou reasonest well!"

We can also imagine the rapture to which he would be aroused in perusing the thundering orations of Demosthenes, and the lofty strains of Homer, the notes of whose lyre, shall be prolonged to the latest generation. The man who could converse with such writers was, in a certain sense, elevated above common wants; and on beholding his devotion to learning, we cease to wonder that he should prefer "Greek books" to all outward adornment. This man was afterwards designated by Luther,—"Decus nostrum, et spes nostra" (our glory and our hope).

If we turn our attention to other countries, we shall find abundant proof of our proposition. We have seen what Erasmus, the student of Rotterdam, has accomplished. His case is by no means singular. We all know how we laughed over the ingenious fables of Æsop, and admired the wholesome lessons which they are designed to convey; yet this man

was not affiliated to kings or nobles, he was a *slave*, but amid his slavery he was *free* in mind, and he has bequeathed morals to posterity of which the most puritanical have no reason to be ashamed. Æsop was not the only slave-writer; Publius Syrus and Terence were both bondsmen originally; so was Epictetus, the renowned Stoic, but having obtained his freedom, he devoted himself to study, and became eventually known as Epictetus the philosopher; and although he lived on terms of the greatest familiarity with the Emperor Adrian, he dwelt, according to history, "in a house without a door,—with no furniture but a table,—a small bedstead, and a wretched coverlet." Although we condemn such extremes in any man, where they can be avoided, yet the matter is evident that our proposition is correct. Epictetus was eccentric. Affected eccentricity is contemptible; it is sometimes assumed as an apology for ignorance, as oddity is often mistaken for profundity. Wisdom urges to the imitation of the *diligence* of Epictetus, but wisdom, combined with prudence, condemns his folly in spurning the necessaries and comforts of life. We may here convey a lesson to those who copy the examples of others. Let all *excellences* be admired and reflected, but let all *defects* be avoided, and all excrescences pruned. It too frequently occurs that youthful idolaters of genius copy the *faults*, rather than the *beauties*, of those whom they admire. Admiration generally leads to imitation, and imitation frequently leads astray, when it is not balanced by a vigorous and independent intellect. The mere imitator assumes a thousand forms; novelty is his greatest attraction; he is driven with every wind, he is "unstable as water," and this instability is utterly incompatible with superlative excellence.

Another illustrious instance bearing upon the subject, is that of Protagoras, who, from being a common porter, rose to eminence as a Greek philosopher. He was a self-educated geometrician; as this was his "ruling passion," everything he did was as geometrical as his skill could render it. Hence we read, that upon one occasion when he was carrying *wood* into Abdera, his native town, he had it so skilfully arranged as to attract the notice of Democritus, who, on conversing with him, perceived his marvellous talent for mathematical and philosophical pursuits, and generously admitted him as one of his own disciples. In this capacity he laboured as a student only can do, and gave his tutor reason to be proud of the pains he had taken with his humble protegé. He knew not the indulgence of wealthy society; he was not *wise*, because he was *rich*, or on account of his *poverty*. His wisdom was independent of any secular possessions; it was the result of continual plodding and digging in the mines of knowledge, where the poor man is as welcome as the rich, and in a thousand cases more successful. An industrious hand has collected the following list, which will be pondered with delight, as affording additional evidence in support of the subject we are now examining:—"Euripides was the son of a fruiterer; Virgil, of a baker; Horace, of a freed slave; Anayot, of a currier; Voiture, of a tax-gatherer; Lamothe, of a hatter; Sixtus the Fifth, of a swine-herd; Fletcher, of a chandler; Massillon, of a turner; Tamerlane, of a shepherd; Greinault, of a journeyman-baker; Rollin, of a herdsman; Moliere, of an upholsterer; J. J. Rousseau, of a watch-maker; Sir Samuel Romilly, of a goldsmith; Ben Jonson, of a mason; Shakespeare, of a butcher; Sir Thomas Lawrence, of a custom-house officer; Collins, of a hatter; Gray, of a notary; Beattie, of a farmer; Sir Edward Sugden, of a barber; Thomas Moore, of a grocer; Rembrandt, of a miller." Let any man look upon this gallery, and be requested to write a general motto, which would comprehend all the circumstances of the individuals, and what motto would be more expressive and appropriate than the title of this essay, viz., intellectual excellence, independent of social position.

These names hold a high rank in the world of literature; they are as the galaxy of the literary heavens, a galaxy upon which the latest posterity will gaze with rapturous admiration! Not one could boast that he

"Deduced his birth
From loins enthroned, or rulers of the earth;"

yet the whole held a sovereignty in the realms of mind incomparably superior to the monarchy of nations.

LESSONS IN GREEK.—No. IV.

By John R. Beard, D.D.

Before I treat of the declension of nouns, I must give the definite article, as it is so intimately connected with nouns that the latter cannot well be set forth without the former; and as the article is often used as indicative of the gender of the noun.

The Definite Article, ὁ, ἡ, το, *the.*

Singular.

	Mas.	*Fem.*	*Neut.*	*English.*
Nom.	ὁ	ἡ	το	the.
Gen.	του	της	του	of the.
Dat.	τῳ	τῃ	τῳ	to *or* by the.
Acc.	τον	την	το	the.

Plural.

Nom.	οἱ	αἱ	τα	the.
Gen.	των	των	των	of the.
Dat.	τοις	ταις	τοις	to *or* by the.
Acc.	τους	τας	τα	the.

Dual.

Nom. Acc.	τω	τα	τω	the.
Gen. Dat.	τοιν	ταιν	τοιν	of, to the.

There is no form for the vocative; ω, which is commonly used, is an interjection. The way to learn the article (the same remarks will hold good of the adjectives) is to repeat the parts first perpendicularly, ὁ, του, τῳ, τον, &c., and then horizontally, as ὁ, ἡ, το, until you are perfectly familiar with the whole. When you think you have mastered the task, examine yourself by asking "What is the accusative singular, feminine gender?" "What is the nominative plural, masculine gender?" &c.; and when you have given an answer from your head alone consult the book, to ascertain whether you are correct. Finally, write out the article in full from memory. Indeed, spare no pains to make yourself master of the article. There is a special reason for this advice, since the terminations of the article are, in the main, the same as the terminations of the noun and the adjective.

I have already said that there are, in Greek, three declensions: the essential forms of two of those three declensions are contained in the article which you have just learnt: thus

Case-Endings of First and Second Declensions.

Singular.

	First. (Fem.)	*Second.* (Masc.)	*Second.* (Neut.)	*English Equivalent.*
Nom.	η	ος	ον	
Gen.	ης	ου	ου	of.
Dat.	ῃ	ῳ	ῳ	to, by.
Acc.	ην	ον	ον	

Plural.

Nom.	αι	οι	α	
Gen.	ων	ων	ων	of.
Dat.	αις	οις	οις	to, by.
Acc.	ας	ους	α	

Dual.

Nom. Acc.	α	ω	ω	
Gen. Dat.	αιν	οιν	οιν	of, to, by.

Learn these case-endings very carefully. You will then, as it were by anticipation, have acquired the chief forms of the first and second declensions. And observe, here, some general facts, the recollection of which you will hereafter find very useful. These are signs or tokens of the feminine gender, namely, η, ης, ῃ, ην, αι, αις, ας. These are usually signs or tokens of the masculine gender, namely, οι, ου, ω, ον, οι, οις, ους. These are marks of the neuter gender, namely, ον, α. Then, in regard to the cases, observe that ς and ου are indications of the genitive singular; the iota subscript of the dative singular; ις of the dative plural; and ων of the genitive plural.

In the article, as in nouns and adjectives, the nominative and accusative neuter in the three numbers are the same; thus

	Sing.	*Plur.*	*Dual.*
Nom.	το (ον)	τα (α)	τω (ω.)
Acc.	το (ον)	τα (α)	τω (ω.)

You will ascertain how much you have become master of, and be aided in fixing your acquirement in your memory, if, before you proceed to the declensions considered separately, you now study this

General View of the Three Declensions.

	First.			*Second.*		*Third.*
				Singular.		
	Fem.		*Mas.*	*Mas*	*Neut.*	
Nom.	η	α	ης ας	ος	ον	α, ι, υ, ω, ν, ξ, ρ, ς, ψ
Gen.	ης	ας	ου	ου		ος.
Dat.	ῃ	ᾳ	ῳ	ῳ		ι
Acc.	ην	αν	ην αν	ον		α
				Plural.		
Nom.		αι		οι α		ες
Gen.		ων		ων		ων
Dat.		αις		οις		σι, εσι
Acc.		ας		ους α		ας
				Dual.		
Nom. Acc.		α		ω		ε
Gen. Dat.		αιν		οιν		οιν

These are the case-endings of the nouns of the three declensions. Knowing these, you can easily form a noun or give any case and number of a noun. Suppose the noun is τιμη, *honour*; τιμη consists of two parts, namely, the stem or crude form τιμ, and the nominative singular termination η. Take from τιμη the case-ending, you have the stem τιμ; add to the stem τιμ the case-ending, you have τιμη, the nominative singular. You will see this exemplified in this table.

Stem and Case-Endings of a Noun.

τιμη, *honour.*

	Stem.	*Case-Endings.*	*The two united.*
		Singular.	
Nom.	τιμ	η	τιμ-η
Gen.	τιμ	ης	τιμ-ης
Dat.	τιμ	ῃ	τιμ-ῃ
Acc.	τιμ	ην	τιμ-ην
		Plural.	
Nom.	τιμ	αι	τιμ-αι
Gen.	τιμ	ων	τιμ-ων
Dat.	τιμ	αις	τιμ-αις
Acc.	τιμ	ας	τιμ-ας
		Dual.	
Nom. Acc.	τιμ	α	τιμ-α
Gen. Dat.	τιμ	αιν	τιμ-αιν.

Let us throw away the hyphen - and then from the common form τιμ we have τιμη, τιμης, τιμῃ, τιμην, τιμαι, τιμων, τιμαις, τιμας, τιμα, τιμαιν.

This explanation will in substance serve for the nouns and adjectives generally.

In the preceding tables the vocative case is not given; the reason is, that in the first declension there is no form peculiar to the vocative, the nominative-form serving also as a vocative-form.

The First Declension.

The first declension has four terminations in the nominative singular, namely η, ᾰ (or ᾱ), ης and ας. Of these four terminations, two, namely η and α, are feminine; and two, namely ης and ας, are masculine.

Case-Endings of the First Declension.

	Singular.				*Plural.*	*Dual.*
	Feminine.		*Masculine.*			
Nom.	η	α	ης	ᾱς	αι	α
Gen.	ης	ας	ης	ου	ων	αιν
Dat.	ῃ	ᾳ	ῃ	ῳ	αις	αιν
Acc.	ην	αν	ην	ᾱν	ας	α
Voc.	η	α	η, α	ᾱ	αι	α

Nouns of the first declension may be divided into such as in the singular have η in all their cases, and such as in the singular have α in all their cases. I shall present specimens of both, to be carefully learnt by heart.

Feminine Nouns,

1. Such as have η in all their cases.

	Justice.	*Victory.*	*Honor.*	*Opinion.*	*A Fig-tree.*
Sing. N. η	δικ-η	νικ-η	τιμ-η	γνωμ-η	συκ(εα)ῆ*
G. της	δικ-ης	νικ-ης	τιμ-ης	γνωμ-ης	συκ-ῆς
D. τῃ	δικ-ῃ	νικ-η	τιμ-η	γνωμ-η	συκ-ῇ
A. την	δικ-ην	νικ-ην	τιμ-ην	γνωμ-ην	συκ-ῆν
V. ω	δικ-η	νικ-η	τιμ η	γνωμ η	συκ-ῆ
Plur. N. αἱ	δικ-αι	νικ-αι	τιμ αι	γνωμ αι	συκ-αῖ
G. των	δικ-ων	νικ ων	τιμ-ων	γνωμ-ων	συκ-ῶν
D. ταις	δικ-αις	νικ-αις	τιμ-αις	γνωμ-αις	συκ-αῖς
A. τας	δικ ας	νικ-ας	τιμ-ας	γνωμ ας	συκ-ᾶς
V. ω	δικ-αι	νικ-αι	τιμ-αι	γνωμ αι	συκ-αῖ
D.N.A.V. ται	δικ α	νικ-α	τιμ-α	γνωμ α	συκ ᾶ
G.&D. ταιν	δικ-αιν	νικ-αιν	τιμ-αιν	γνωμ-αιν	συκ αῖν

* This mark (˜), called the circumflex, denotes a contraction, or a mingling of two vowels into one; thus συκῆ consists in full of συκεᾳ, as intimated in the text.

Feminine Nouns,

2. Such as have α in all their cases.

	α long.			*α short.*		
	Shade.	*Country.*	*A Mina.*†	*Hammer.*	*A Muse.*	*A Table.*
S. N	σκι-ᾱ	χωρ-ᾱ	μνᾶ (αα)	σφυρ-ᾰ	Μουσ-α	τραπεζ α
G	σκι-ας	χωρ-ας	μν ᾶς	σφυρ-ας	Μουσ ης	τραπεζ-ης
D	σκι-ᾳ	χωρ ᾳ	μν-ᾳ	σφυρ ᾳ	Μουσ ῃ	τραπεζ ῃ
A	σκι-αν	χωρ-αν	μν ᾶν	σφυρ-αν	Μουσ-αν	τραπεζ-αν
V	σκι-α	χωρ-α	μν-ᾱ	σφυρ-α	Μουσ-α	τραπεζ-α
P. N	σκι-αι	χωρ-αι	μν-αῖ	σφυρ-αι	Μουσ-αι	τραπεζ-αι
G	σκι ων	χωρ-ων	μν ῶν	σφυρ-ων	Μουσ-ων	τραπεζ-ων
D	σκι-αις	χωρ-αις	μν-ᾶις	σφυρ-αις	Μουσ αις	τραπεζ-αις
A	σκι-ας	χωρ-ας	μν ᾶς	σφυρ-ας	Μουσ-ας	τραπεζ-ας
V	σκι-αι	χωρ αι	μν-αῖ	σφυρ-αι	Μουσ-αι	τραπεζ-αι
D.N A V	σκι-α	χωρ-α	μν-ᾱ	σφυρ-α	Μουσ-α	τραπεζ-α
G D	σκι-αιν	χωρ-αιν	μν-ᾶιν	σφυρ-αιν	Μουσ-αιν	τραπεζ-αιν

In nouns ending in η, the η remains in all the cases of the singular number. In nouns ending in α two kinds are observable; 1st, the nominative in ᾱ (α long) or ᾰ (α short), and the α remains in all the cases when it is preceded by ρ, or the vowels ε and ι (in this last instance the α is called *alpha pure*); thus χωρα, χωρας, &c.; ἰδεα, *form*, ἰδεας; σοφια, *wisdom*, σοφιας; χρεια, *utility*, χρειας; ευνοια, *benevolence, favour*, ευνοιας. Hereto belong contracted nouns in ᾱ, as μνᾶ; also αλαλᾱ, *a war-cry*; and some proper names in ᾱ, as Ανδρομεδᾱ, *Andromeda*; Ληδᾱ, *Leda*; Φιλομηλᾱ, *Philomela*.

2nd. The nominative ends in ᾰ (α short); the α, however, remains only in the accusative and the vocative; in the genitive and dative it is changed into η when the α is preceded by λλ, σ, σσ, ττ, ζ, ξ, ψ, and (in general) ν.

When α is preceded by ε or α, a contraction takes place in some words, the εα being changed into ῆ, and αα into ᾱ; the last syllable is then circumflexed in all the cases; see the declension of συκεα (συκῆ) and μνᾶ (μναα).

According to these paradigms, decline the feminine gender of adjectives of three terminations. The feminine gender of

† A mina is a Greek coin.

these adjectives ends in *α* when preceded by *ι* or *ρ*. The adjectives in *οος* have *οα* in the feminine when *ο* is preceded by *ρ*; otherwise they end in *οη*; thus *αθροα, dense, ογδοη, eight.*

NOUNS AND ADJECTIVES combined; First Declension.

	Distinguished Honour.	*A just Opinion.*	*A hateful Land.*
S. N.	καλη τιμη	δικαια γνωμη	εχθρα χωρα
G.	καλης τιμης	δικαιας γνωμης	εχθρας χωρας
D.	καλῃ τιμῃ	δικαιᾳ γνωμῃ	εχθρᾳ χωρᾳ
A.	καλην τιμην	δικαιαν γνωμην	εχθραν χωραν
V.	καλη τιμη	δικαια γνωμη	εχθρα χωρα
P. N.	καλαι τιμαι	δικαιαι γνωμαι	εχθραι χωραι
G.	καλων τιμων	δικαιων γνωμων	εχθρων χωρων
D.	καλαις τιμαις	δικαιαις γνωμαις	εχθραις χωραις
A.	καλας τιμας	δικαιας γνωμας	εχθρας χωρας
V.	καλαι τιμαι	δικαιαι γνωμαι	εχθραι χωραι
D. N.A.V.	καλα τιμα	δικαια γνωμα	εχθρα χωρα
G. & D.	καλαιν τιμαιν	δικαιαιν γνωμαιν	εχθραιν χωραιν

Write out in full the following nouns: Μηδεια, *Medea*; ἀληθεια, *truth*; μοιρα, *fate*; ἀρουρα, *arable land*; δοξα, *opinion*. Write out also, in pairs, as in the last table, these nouns and adjectives, namely, μικρα μανια, *short madness*; μακρα λυπη, *long grief*; βραχεια ἡδονη, *short pleasure*; πασα κακια, *all wickedness.*

VOCABULARY.

Ἀδολεσχια, ας, ἡ, garrulity, talkativeness.
Ἀρετη, ης, ἡ, virtue.
Βια, ας, ἡ, force.
Βοηθεια, ας, ἡ, assistance.
Διαβολη, ης, ἡ, calumny.
Δικη, ης, ἡ, justice.
Ἀδικια, ας, ἡ, injustice.
Ἡδονη, ης, ἡ, pleasure.
Κακια, ας, ἡ, wickedness.
Καρδια, ας, ἡ, the heart.
Καταφῦγη, ης, ἡ, a refuge.
Αυμη, ης, ἡ, shame.
Λυπη, ης, ἡ, grief.
Λυρα, ας, ἡ, a lyre.
Μεριμνα, ης, ἡ, care.
Πενια, ας, ἡ, poverty.
Πλεονεξια, ας, ἡ, avarice.
Συνηθεια, ας, ἡ, intercourse, companionship.
Τρυφη, ης, ἡ, luxury.
Φιλια, ας, ἡ, friendship.
Ἀληθινη, true.
Χαλεπη, hard, troublesome.
Εἰκω, I yield.
Ἀγω, I lead, drive.
Ἐπαγω, I bring.
Θεραπευω, I attend to, heal, court.
Λυω, I undo, loose, dissipate.
Τειρω, I rub (*Lat.* tero), grieve.
Τικτω, I bring forth.
Ἀπεχομαι, I keep myself from, abstain from.
Ἐπαγγελλομαι, I promise.
Γιγνομαι, I become, I arise.
Πειθομαι (with dat.), I am persuaded, I believe, trust, obey.
Πολλακις, often.
Ὡς, as.
Και, and.

EXERCISES:—GREEK-ENGLISH.

Μη εικε τῃ βιᾳ; ἡ λυρα μεριμνας λυει; ἡ φιλια επαγγελλεται καταφυγην και βοηθειαν; ἡ μεριμνα την καρδιαν εσθιει; θεραπευετε τας Μουσας; μη πειθου διαβολαις; ἡ δικη πολλακις τῃ ἀδικιᾳ εικει; πολλακις χαλεπῃ πενιᾳ τειρομεθα; την ἀδολεσχιαν φευγετε; ἡ κακια λυπην επαγει: τρυφη ἀδικιαν και πλεονεξιαν τικτει; φευγε την τρυφην ὡς λυμην; δια αρετης και συνηθειας αληθινη φιλια γιγνεται.

ENGLISH-GREEK.

Abstain from force; he abstains from force; he does not abstain from force; they abstain from force; avoid injustice: you avoid injustice; I avoid injustice as madness; force brings grief; through justice pleasure arises; true friendships arise through virtue; the heart is grieved by poverty; cares are dissipated by the lyre.

ETYMOLOGICAL VOCABULARY.

ΔΙΚΗ, justice, judgment.
Δικησις, punishment.
Δικηφορος, bringing punishment, *or* retribution.
Δικιδιον, a (trumpery) lawsuit.
Δικογραφια, an indictment.
Δικολογεω, I speak in a court of justice.
Δικολογος, a pleader.
Δικομαχεω, I litigate.
ΚΑΚΟΣ, bad, wicked.
Κακια, wickedness, baseness.
Κακιζω, I make wicked, revile.
Κακισμος, reviling, blame.
Κακοβουλια, bad counsel, folly.
Κακογαμος, unhappily married.
Κακογειτων, a bad neighbour.
Κακογενης, of low origin.
Κακογλωσσια, evil-speaking.
Κακογλωσσος, an evil speaker.
Κακοδαιμων, having an evil spirit, unhappy, wretched.
ΦΙΛΟΣ, a friend.
Φιλια, friendship.
Φιλικος, befitting a friend.
Φιλιος, friendly.
Φιλιππια, fondness for horses.
Φιλογελοιος, fond of laughter, sportive.
Φιλοδημος, loving the people, (*Lat.* Publicola).
Φιλοδικος, fond of law-suits.

SECONDARY COMPONENTS.

Φορος, bearing, from Φερω, *I bear, produce*; μαχη, *a fight, battle*; γαμος, *marriage*; γειτων, *a neighbour*; γενησις, begetting, from γενναω, *I beget*; γλωσσα (or γλωττα), *a tongue*; δαιμων, *a divinity*; ἱππος, *a horse*; γελοιος, *laughable*; γελως, *laughter*; δημος, *the people.*

By the help of these "Secondary Components" and the Vocabulary, the learner ought to be able to give the meanings of the several *derivative* words. Words, the roots of which have occurred previously, as γραφια in δικογραφια, are not repeated under the head of "Secondary Components," unless for special reasons.

In επαγω you see a preposition prefixed to a verb: επαγω is made up of επι, *upon*, or *to*, and αγω (*Lat.* ago), *I lead* or *conduct.* Hence επαγω means, *I lead to.* Instead of επι, we might have had the preposition απο, as in απαγω. Now απο means *from, away from*; accordingly, απαγω is *I lead away.* With ανα, which denotes *motion upwards*, αγω in the form of αναγω, signifies, *I lead up*; and with κατα, as in καταγω, the same root means, *I lead down.* You thus see how the prepositions are used as prefixes, and how, as such, they modify the signification and increase the vocabulary. A comparison of the English "meanings" with the Greek verbs as just given, will show that what we express by an uncombined verb and an adverb or preposition, the Greeks express by a verb and a prefix in combination.

N.B. It may be well distinctly to state, though it is already implied, that the genitive in Greek is to be Englished by *of*, and the dative by *to.* Sometimes *from* is a better translation of the genitive, and *by* is required for the dative. The subject and direct object are generally without a preposition in English; and when the Greek verb has its object in the genitive or the dative case, the English idiom must be followed in the translation, and not the Greek, except when the two correspond. An English construction corresponding with the Greek construction is to be preferred, when it can be had with the preservation of perfect purity in the translation. After all, the idioms of the two languages vary considerably, and it is possible for a rendering in English to be too close to the original. Keep as near as you can to the Greek, but never forfeit correctness in the English.

LESSONS IN GERMAN PRONUNCIATION.—No. IX.

Die vier Jahreszeiten.

Dee feer yâh″-ress-tsi′-ten.

Ach wenns doch immer Winter bliebe! sagte Ernst, als
âch venss dŏch im′-mer vin′-ter blee′-bai! zâhch′-tai Ernst, âlss

er einen Mann von Schnee gemacht hatte, und im Schlitten
air i′-nen mân fon shney gai-mâcht′ hât′-tai, ŏŏnt im shlit′-ten

gefahren war.
gai-fâh′-ren vâhr.

Sein Vater sagte, er möchte diesen Wunsch in sein-
Zine fâh′-ter zâhch′-tai, air möch′-tai dee′-zen vŏŏnsh in zi′-nai

Schreibtafel schreiben, und er that es.
shripe″-tâh′-fel shri′-ben, ŏŏnt air tâht ess.

Der Winter verging, es kam der Frühling. Ernst stand
Dair vin′-ter ferr-ghink′, ess kâhm dair frü′-link. Errnst stânt

mit seinem Vater bei einem Blumenbeete, auf welchem
mit zi′-nem fah′-ter by i′-nem bloo″-men-bey′-tai, ouf vel′-chem

Hyacinthen, Aurikeln und Narcissen blüheten, und
hee-â-tsin′-ten, ou-ree′-keln ŏŏnt nâr-tsiss′-sen blü′-hai-ten, ŏŏnt

war vor Freuden ganz außer sich.
vâhr fore froi′-den gânts ou′-sser sich.

Das iſt eine Freude des Frühlings, ſagte ſein Vater;
Dåss ist i'-nai froi'-dai dess frü'-links, zåhch'-tai zine fåh-'ter;
ſie wird bald wieder vergehen.
zee virrt bålt vee'-der ferr-ghey'-hen.

Ach antwortete Ernſt, wenns doch immer Frühling
åch, ånt'-vor-tai-tai Frrust, venns döch im'-mer frü'-link
wäre.
vai'-rai.

Schreib dieſen Wunſch in meine Schreibtafel, ſagte
Shripe dee'-zen vöönsh in mi'-nai shripe"-tåh'-fel, zåhch'-tai
ſein Vater, und er that es.
zine fåh'-ter, öönt air tåht ess.

Der Frühling verging, es kam der Sommer. Ernſt
Dair frü'-link ferr-ghink', ess kåhm dair zom'-mer. Errnst
ging mit ſeinen Eltern und einigen Geſpielen an einem
ghink mit zi'-nen el'-tern öönt i'-nig-en gai-spee'-len ån i'-nem
warmen Sommertage nach dem nächſten Dorfe, und ſie
vår'-men zom"-mer-tå'-gai nåch dem naich'-sten dor'-fai, öönt zee
blieben daſelbſt den ganzen Tag. Rund um ſich her
blee'-ben dåh-zelpst' dain gån'-tsen tåhg. Röönt öom zich hair
ſahen ſie grüne Saaten und Wieſen, mit tauſendfältigen
zåh'-hen zee grü'-nai zåh'-ten öönt vee'-zen, mit tow"-zent-fel'-tig-en
Blumen geſchmückt, und Auen, auf welchen junge
bloo'-men gai-shmückt', öönt ou'-en, ouf vel'-chen yöng'-gai
Lämmer tanzten und muthwillige Füllen ihre Sprünge
lem'-mer tånts'-ten öönt moot"-vil'-li-gai fül'-len ee'-rai sprüng'-ai
machten.
mách'-ten.

Sie aßen Kirſchen und anderes Sommerobſt,
Zee åh'-ssen kirr'-shen öönt ån'-dai-ress zom'-mer-o'pst,
und ließen ſich's den ganzen Tag über recht wohl
öönt lee'-ssen zich'ss dain gån'-tsen tåhch ü'-ber recht vole
ſein.
zine.

Nicht wahr, fragte der Vater beim Zurückgehen,
Nicht vår, fråhch'-tai dair fåh'-ter bime tsoo-rück"-gai'-hen,
der Sommer hat doch auch ſeine Freuden?
dair zom'-mer håht döch ouch zi'-nai froi'-den?

O, antwortete Ernſt, ich wollte, daß es immer Som-
Oh, ånt'-vor-tai-tai Errnst, ich vol'-tai, dåss ess im'-mer zom'-
mer wäre! Er mußte auch dieſes in die Schreibtafel
mer vai'-rai! Air mööss'-tai ouch dee'-zes in dee shripe"-tåh'-fel
ſeines Vaters ſchreiben.
zi'-nes fåh'-ters shri'-ben.

Endlich kam der Herbſt. Die ganze Familie
Ent'-lich kåhm dair herrpst. Dee gån'-tsai fa-mee'-lee-ai
brachte einige Tage in einem Weinberge zu. Es war
bråch'-tai i'-nig-ai tåh'-gai in i'-nem vine'-berr-gai tsoo. Ess vår
nicht mehr ſo heiß, als im Sommer, aber die Luft war ſanft
nicht mair zo hice, åss im zom'-mer, åh'-ber dee lööft vår zånft
und der Himmel heiter. Die Weinſtöcke waren mit
öönt dair him'-mel hi'-ter. Dee vine'-stöck-kai våh'-ren mit
re ſen Trauben behangen: auf den Miſtbeeten ſah man
ri -ſen trou'-ben bai-hång'-en; ouf dain mist'-bey-ten zåh man
wohlſchmeckende Melonen liegen, und die Zweige der
vole"-shmeck'-ken-dai mai-lo'-nen lee'-ghen, öönt dee tswi'-gai dair
Bäume wurden von reifen Früchten niedergezogen.
boi'-mai vöör'-den fon ri'-fen früch'-ten nee"-der-gai-tso'-ghen.

Das war erſt ein rechtes Feſt für unſern Ernſt, der nichts
Dåss vår airst ine rech'-tes fest fü'r öön'-zern Errnst dair nichts
lieber aß als Obſt. Die ſchöne Zeit, ſagte ſein Vater,
lee'-ber åhss åls o'pst. Dee shö'-nai tsite, zåhcht'-ai zine fåh'-ter,
wird bald vorüber ſein, der Winter iſt ſchon vor der Thür,
virrt bålt fore'-ü-ber zine, dair vin'-ter ist shone fore dair t'ür,
um den Herbſt zu vertreiben.
ööm dain herrpst tsoo ferr-tri'-ben.

Ach, ſagte Ernſt, ich wollte, daß er wegbliebe,
åch, zåhch'-tai Errnst, ich voll'-tai, dåss air vaich'-blee-bai,
und daß es immer Herbſt wäre.
öönt dåss ess im'-mer herrpst vai'-rai.

Wollteſt du das wirklich? fragte ſein Vater.
Voll'-test doo dåss virrk'-lich? fråhch'-tai zine fåh'-ter.
Wirklich war ſeine Antwort. Aber, fuhr ſein Vater
Virrk'-lich, vår zi'-nai ånt'-vort. åh'-ber, foor zine fåh'-ter
fort, indem er die Schreibtafel aus der Taſche
fort, in-daim' air dee shripe"-tåh'-fel ouss dair tåsh'-shai
zog, ſieh doch einmal, was hier geſchrieben ſteht;
tso'ch, zee döch ine-måhl', våss here gai-shree'-ben stey't;
lies doch.
leess döch.

„Ich wollte, daß es immer Winter wäre."
"Ich voll'-tai, dåss ess im'-mer vin'-ter vai'-rai."

Und nun lies einmal hier auf dieſer Seite, was
öönt noon leess ine-måhl' here ouf dee'-zer zi'-tai, våss
ſteht denn da?
stey't denn dåh?

„Ich wollte, daß es immer Frühling wäre."
"Ich voll'-tai, dåss ess im'-mer frü'-link va'-rai."

Und was auf dieſer Seite hier?
öönt våss ouf dee'-zer zi'-tai here?

„Ich wollte, daß es immer Sommer wäre."
"Ich voll'-tai, dåss ess im'-mer zom'-mer vai'-rai."

Kennſt du, fuhr er fort, die Hand, die dieſes geſchrie-
Kennst doo, foor air fort, dee hånt, dee dee'-zes gai-shree'-
ben hat?
ben håht?

Das habe ich geſchrieben, antwortete Ernſt.
Dåss hâh'-bai ich gai-shree'-ben, ånt'-vor-tai-tai Errnst.

Vater. Und was wünſcheſt du jetzt eben?
Fåh'-ter. öönt våss vünsh'-test doo yetst ai'-ben?

Ernſt. Ich wünſchte, daß es immer Herbſt ſein
Errnst. ich vünsh'-tai, dåss ess im'-mer herrpst zine
möchte.
möch'-tai.

Das iſt doch ſonderbar genug, ſagte der Va-
Dåss ist döch zon'-der-bâhr gai-noo'ch', zåhch'-tai dair fåh'-
ter. Im Winter wünſchteſt du, daß es Winter, im Früh-
ter. Im vin'-ter vünsh'-test doo, dåss ess vin'-ter, im frü'-
ling, daß es Frühling, im Sommer, daß es Sommer, und
link, dåss ess frü'-link, im zom'-mer, dåss ess zom'-mer, öönt
im Herbſt, daß es Herbſt bleiben möchte. Denk ein-
im herrpst, dåss ess herrpst bli'-ben möch'-tai. Denk ine-
mal nach, was folgt wohl daraus?
mâhl' nâch, våss folcht vole dâ-rouss'?

Ernſt. Daß alle Jahreszeiten gut ſind.
Errnst. Dåss âl'-lai yâh"-ress-tsi'-ten goo't zint.

Vater. Ja, daß ſie alle reich an Freuden, reich an
Fâh'-ter. Yâh, dåss zie âl'-lai ri'ch an froi'-den, ri'ch ân

mannigfaltigen Gaben ſind, und daß der liebe
mán″-nich-fál′-tig-en gáh′-ben zínt, ŏönt dáss dair lee′-bai
große Gott viel beſſer ſeine Welt eingerichtet hat,
gro′-ssai gott feel bess′-ser zi′-nai velt ine″-gai-rich′-tet háht,
als wir armen Menſchen verſtehen.
álss veer ár′-men men′-shen ferr-stey′-hen.

VOCABULARY.

Jahreszeit, *f.* season
Jahr, *n.* year
Zeit, *f.* time
Ach, oh, alas
wenn's, *contraction*, if it
Schlitten, *m.* sledge
er möchte, that he should
Wunſch, *m.* wish, desire
ſchreiben, to write
Schreibtafel, *m.* pocket book, tablet
ver, *prefix*, away
Beet, *n.* bed (in a garden)
Blumenbeet, *n.* flowerbed
außer, out of, beside
bald, soon
einige, *pl.* some
Geſpiele, *m.* play-fellow
nächſt, next
Dorf, *n.* village
daſelbſt, there
grün, green
Saat, *f.* cornfield, seed
Wieſe, *f.* meadow
tauſend, thousand
fältig, *adj.* fold
ſchmücken, to adorn
Aue, *f.* pasture
muthwillig, playful, wanton
Füllen, *n.* colt, foal
Sprung, *m.* spring, gambol
Kirſche, *f.* cherry
Obſt, *n.* fruit
ſich es wohl ſein laſſen, to make one's self comfortable
recht, very, right
zurück, back
müſſen, to be obliged, must
Herbſt, *m.* autumn, fall
zubringen, to spend
heiß, hot
heiter, serene, cheerful
Weinſtock, *m.* vine
Stock, *m.* stick
reif, ripe
Traube, *f.* grape
Miſt, *m.* manure
Miſtbeet, *n.* hot-bed
Zweig, *m.* branch, bough
niederziehen, to bend
ziehen, to draw, march, move
erſt, only, not till now
Feſt, *n.* feast, festival
lieber, rather, dearer
lieber eſſen, to prefer to eat
vorüber, past, over
treiben, to drive
vertreiben, to drive away, to expel
wirklich, really
kennen, to know
fortfahren, to continue
Taſche, *f.* pocket
Seite, *f.* page, side
ſonderbar, singular
nachdenken, to reflect
folgen, to follow
mannigfaltig, manifold
einrichten, to arrange
richten, to right, judge

LESSONS IN GERMAN.—No. LXII.

§ 72. PARADIGMS OF THE AUXILIARIES OF THE FIRST CLASS.

(1) Haben, to have.

INDICATIVE.

Present Tense.

SING. 1	ich habe,	I have.
SING. 2	du haſt,	thou hast.
SING. 3	er hat,	he has.
PLUR. 1	wir haben,	we have.
PLUR. 2	ihr habet,	you have.
PLUR. 3	ſie haben,	they have.

Imperfect Tense.

SING. 1	ich hatte,	I had.
SING. 2	du hatteſt,	thou hadst.
SING. 3	er hatte,	he had.
PLUR. 1	wir hatten,	we had.
PLUR. 2	ihr hattet,	you had.
PLUR. 3	ſie hatten,	they had.

Perfect Tense.

SING. 1	ich habe gehabt,	I have had
SING. 2	du haſt gehabt,	&c.
SING. 3	er hat gehabt,	
PLUR. 1	wir haben gehabt,	
PLUR. 2	ihr habet gehabt,	
PLUR. 3	ſie haben gehabt,	

Pluperfect Tense.

SING. 1	ich hatte gehabt,	I had had.
SING. 2	du hatteſt gehabt,	&c.
SING. 3	er hatte gehabt,	
PLUR. 1	wir hatten gehabt,	
PLUR. 2	ihr hattet gehabt,	
PLUR. 3	ſie hatten gehabt,	

First Future Tense.

SING. 1	ich werde haben,	I shall have.
SING. 2	du wirſt haben,	&c.
SING. 3	er wird haben,	
PLUR. 1	wir werden haben,	
PLUR. 2	ihr werdet haben,	
PLUR. 3	ſie werden haben.	

Second Future Tense.

SING. 1	ich werde	gehabt haben,	I shall have had.
SING. 2	du wirſt		&c.
SING. 3	er wird		
PLUR. 1	wir werden		
PLUR. 2	ihr werdet		
PLUR. 3	ſie werden		

SUBJUNCTIVE.

Present Tense.

ich habe,	I may have.
du habeſt,	thou mayst have.
er habe,	he may have.
wir haben,	we may have.
ihr habet,	you may have.
ſie haben,	they may have.

Imperfect Tense.

ich hätte,	I might have.
du hätteſt,	thou mightst have.
er hätte,	he might have.
wir hätten,	we might have.
ihr hättet,	you might have.
ſie hätten,	they might have.

Perfect Tense.

ich habe gehabt,	I may have had.
du habeſt gehabt,	&c.
er habe gehabt,	
wir haben gehabt,	
ihr habet gehabt,	
ſie haben gehabt,	

Pluperfect Tense.

ich hätte gehabt,	I may have had.
du hätteſt gehabt,	&c.
er hätte gehabt,	
wir hätten gehabt,	
ihr hättet gehabt,	
ſie hätten gehabt,	

First Future Tense.

ich werde haben,	(if) I shall have.
du werdeſt haben,	&c.
er werde haben,	
wir werden haben,	
ihr werdet haben,	
ſie werden haben,	

Second Future Tense.

ich werde	gehabt haben,	(if) I shall have had.
du werdeſt		&c.
er werde		
wir werden		
ihr werdet		
ſie werden		

CONDITIONAL.

First Future.

ich würde	haben,	I should have &c.
du würdeſt		
er würde		
wir würden		
ihr würdet		
ſie würden		

Second Future.

ich würde	gehabt haben,	I should have had &c.
du würdeſt		
er würde		
wir würden		
ihr würdet		
ſie würden		

IMPERATIVE.

Present Tense.

1. habe du, have thou.
2. habe er, let him have.
1. haben wir, let us have.
2. habet ihr, have ye or you.
3. haben ſie, let them have.

INFINITIVE.

Present Tense.
haben, to have.

Perfect Tense.
gehabt haben, to have had.

First Future.
haben werden, to be about to have.

PARTICIPLE.

Present.
habend, having

Perfect.
gehabt, had

LESSONS IN GEOGRAPHY.—No. XXVIII.

MAP OF SOUTH AMERICA.

(*Continued from page* 250.)

The most remarkable natural feature in the continent of South America is with one exception, the *grand range of mountains* called Cordilleras de los Andes, or Chains of the Andes, which run nearly parallel and comparatively close to its western shores. The commencement of this range is south of the Isthmus of Darien or Panama, and its termination is at the Strait of Magellan, its whole extent being about 4,000 miles, but varying considerably in altitude, as well as in name. The mountains of this range, indeed, take their names according to the countries through which they pass; hence we have the Columbian, the Peruvian, the Bolivian, the Chilian, and the Patagonian Andes. The average heights of the Columbian Andes is about 12,000 feet above the level of the sea, and the highest peak is Chimborazo, which is 21,415 feet above the same level. Antisana, Pinchincha, Cayambe, Cotopaxi, and others, are little inferior in altitude to the "giant of the western world," and the latter is reckoned the most tremendous volcano on the face of the globe. The Peruvian and Bolivian Andes are more elevated than the Columbian chain, their average elevation being about 14,000 feet, and their highest peaks, Sorata and Illimani, reaching the respective elevations of 25,400 feet and 24,350 feet above the level of the sea; and many of the passes across the chain of Upper Peru, are about 16,000 feet above the same level. The Chilian Andes have a less average elevation than any of the former; but the peak of Aconcagua, which is 23,944 feet above the level of the sea, rivals several of the high peaks already mentioned. The Patagonian chain is very considerably lower than any of the preceding, its average height being only about 3,000 feet, and its highest peaks only about 9,000 feet above the level of the sea.

The *plateaus* or *table-lands* of South America are formed of the elevated intervening grounds between the chains or ridges of its mountains just described, and they rival in elevation those of the continent of Asia. The principal of these plateaus, are those of Quito, Pasco, Titicaca, and El Despoblado. The elevation of the plateau of Quito, above the level of the sea, is about 9,000 feet; of Pasco, 11,000 feet; of Titicaca, 13,000 feet; and of El Despoblado, about 14,000 feet. The vast *plains* of South America give rise to a system of *rivers* unparalleled in the rest of the world for magnitude and extent. The great central plain of this continent is divided into three large portions, which receive their names from the immense rivers which run through them respectively, viz., the plain of the Orinoco in the north, the plain of the Amazon in the middle, and the plain of the Rio de la Plata in the south. The Llanos or Savannahs occupy nearly the whole plain of the Orinoco. These are level grassy tracts similar to the Prairies (or vast meadows) of North America, and are annually inundated by the rivers, like the regions of the Nile. The Selvas or Forest-plains extend over the great basin of the Amazon, and as their name denotes, cover the ground with trees, shrubs, and plants; to which may be added vast tracts similar to those in the basin of the Orinoco, and salt and sandy deserts in the interior. The Pampas or immense level plains covered with grass, oats, clover, and other herbage, occupy the plains of the Rio de la Plata, and the regions to the south of it, and in their present wild state form small encouragement for the habitation of man; hence the generally desolate state of the whole of the Patagonian region. The river Orinoco is about 1,200 miles long; it rises in the mountains of Guiana and falls into the Atlantic on the north of British Guiana. The Amazon, which in the upper part of its course is called the Maranon, rises amidst the elevated parts of the Peruvian Andes, flows first northerly and then easterly, and, after a course of 3,900 miles, falls into the Atlantic at the Equator. The basin of the Amazon includes upwards of 2½ millions of square miles or about three-fourths of the surface of Europe, and is supplied with its waters by a number of large tributaries. The Amazon is navigable for large vessels from its embouchure to its junction by the Ucayali, or 2,500 miles from the sea, and for small vessels to the foot of the mountains. Its volume of water is so great, that its freshness is perceptible 500 miles out at sea. To give an idea of the level nature of the basin of this mighty river, we may state that for the space of 600 miles before it discharges its flood into the deep, it has only a fall of 10·5 feet, or about *one-fifth of an inch* per mile, yet it is reckoned to flow into the ocean with about the same velocity as the Ganges. For the whole of this distance, the tides of the Atlantic oppose its majestic flow; but above this point, the declivity being about 6 inches per mile, the velocity of its waters surpasses that of our swiftest steamers; and at this point the opposition of its waters to the flow of the tide becoming tremendous, their united action produces waves which sometimes rise to the height of 180 feet, rolling back upon the rapid stream like the noise of a cataract, and overwhelming all the banks of the Ovellanic region. This phenomenon justly called the *bore*, or by the native Indians *pororoca*, will for ever impede the useful navigation of this king of rivers.

The Rio de la Plata is a broad estuary formed by the junction of the rivers Parana and Uruguay. The length of the Parana is about 2,350 miles from its source to the embouchure of the Plate; and that of the Paraguay, a branch of the same which joins it at the distance of 760 miles from the sea, is about 1260 miles. The Uruguay branch is 800 miles in length. The Parana and the Uruguay are navigable for vessels of considerable burden for nearly 1,000 miles. Other rivers of some importance in South America, are the Magdalena, 860 miles long, which flows into the Caribbean Sea; and the Atrato, 300 miles long, which flows into the Gulf of Darien. The rivers Essequibo, Demerara, Berbice, Surinam, and others, which flow into the Atlantic eastward of the Orinoco, will be remembered chiefly from the important settlements to which they have given their name. The San Francisco, in Brazil, is 1,500 miles long. The Colorado, 600 miles long, and the Negro, 800 miles long, both flow into the Atlantic, south of the La Plata. The rivers on the west coast of South America have all short courses, owing to the vicinity of the Andes to the shore.

The *Lakes* of South America are few. The lake of Titicaca on the table-land of the same name, and at an elevation of 12,847 feet above the level of the sea, contains about 3,800 square miles; near its shores the depth is 720 feet; its waters are fresh. The Lake of Maracaybo, near the shores of the Caribbean Sea, is connected by a narrow strait with the Gulf of Maracaybo, and its waters are brackish; it contains about 5,000 square miles. The Lake dos Patos of the same area, on the south east coast of Brazil, discharges its waters into the sea, by a channel called the Rio Grande do Sul. The *Capes* in this Continent are few and unimportant, with the exception of those mentioned at the commencement of our last lesson. The others are mentioned on the map itself.

BIOGRAPHY.—No. XII.

JEROME STONE.

Jerome Stone may be added to the list of those who are called "self-educated men." Edmund Stone, whose brief biography has been read no doubt by all our readers, was the contemporary of him who is the subject of this biography; and although their minds were not directed to the same studies, yet both of them are illustrious examples of the power of Self-Education.

Jerome Stone was born in 1727, in the parish of Scoonie, in Fifeshire. His father was a seafaring man, and died in a foreign land when Jerome was only three years old. Difficult as it was for his widowed mother to struggle through pecuniary and other difficulties, yet she found means to send Jerome to the parish school. There he learnt reading, writing, and a little arithmetic.

As soon as he was able to work even whilst yet a boy he commenced to toil for his own support. He began to travel around the country as a pedlar trading with common wares, such as tapes, needles, combs, &c. But the mind of Jerome was not at rest in this situation. He aspired to something which he thought would give more exercise to his mental faculties. Accordingly he resigned this profession, and began to trade in books. Here he found ample means for acquiring

knowledge, and forthwith he determined to make himself a scholar.

He was first engaged in the study of the Hebrew language, and although he was unassisted by any teacher, he attained to such a proficiency in the language, by unwearied diligence and application, as to read any passage in the Old Testament at first sight. His next study was the Greek language, and by his wonted perseverance he was soon able to read any passage in the New Testament as well as the Old. How he obtained a knowledge of these languages without being acquainted with the Latin, it is difficult to say. For almost all the Greek and Hebrew grammars or dictionaries were written in Latin at that time. But it has been conjectured by some, and we think it is very probable, that he learnt these languages through the medium of the common translation of the Bible, comparing the Greek and Hebrew words with the English.

He now resolved to learn Latin, but in the study of this language he did not proceed in the same manner as he did with the others. Perhaps he did not remember that "the same resource was open to him still" or perhaps he found he could not learn this language so thoroughly as he had done the Greek and Hebrew. In this dilemma he determined to apply to the parish schoolmaster. With his assistance he made great progress in the Latin language, and in a short time we are told that "he became known as a prodigy of learning."

At this time by some means or other he got acquainted with the Rev. Dr. Tullidelph, principal of the United College in the University of St. Andrews, who was a man of remarkable talent and erudition. Having asked young Stone several questions, he was struck with his talent and abilities; and he proposed that he should proceed to the University, where he undertook to provide him with such things as were necessary to enable him to pursue his studies.

By his industry and perseverance he made rapid progress in every branch of literature and science. The expectations of his friends were more than fulfilled. His abilities and acquirements soon distinguished him, and it is said that "the display of talent out of the class contributed to make him the pride of the University, and the idol of his fellow students."

When he had passed three years in the college, he was appointed assistant in the grammar school of Dunkeld, on the recommendation of the professors. We cannot tell how long he held this office, but alas! in the midst of his literary career, he was suddenly attacked by fever and died, in the thirtieth year of his age, in 1757.

None of his works had been given to the public save a few comic pieces in verse which were printed in the "Scots Magazine." After his death "an Allegory on the Immortality of Authors" was printed, and another work, although it has not been printed, "displayed," we are told, "extraordinary ingenuity and learning." It was entitled "An inquiry into the origin of the nation and language of the Ancient Scots, with conjectures about the Primitive state of the Celtic and other European nations."

W. E. C.

LESSONS IN FRENCH.—No. LXXII.

By Professor Louis Fasquelle, LL.D.

§ 82—Idioms in which the Article is omitted.

Ajouter foi, *to give faith*;
Avoir besoin, *to have need*;
Avoir chaud, *to be warm*;
Avoir coutume, *to be accustomed*;
Avoir dessein, *to intend*;
Avoir dispute, *to have difficulties*;
Avoir envie, *to wish, to desire*;
Avoir appétit, *to have an appetite*;
Avoir faim, *to be hungry*;
Avoir froid, *to be cold*;
Avoir honte, *to be ashamed*;
Avoir mal, *to have a pain*;
Avoir patience, *to have patience*;
Avoir peur, *to be afraid*;
Avoir pitié, *to take pity*;
Avoir raison, *to be right*;
Avoir sommeil, *to be sleepy*;
Avoir soif, *to be thirsty*;
Avoir soin, *to take care*;
Avoir sujet, *to have reason*;
Avoir tort, *to be wrong*;
Chercher fortune, *to seek one's fortune*;
Courir risque, *to run the risk*;
Demander justice, *to demand justice*;
Demander pardon, *to beg pardon*;
Donner avis, Faire part, } *to inform*;
Entendre raillerie,* *to bear jokes*;
Faire attention, *to pay attention*;
Faire bonne chère, *to live well*;
Faire crédit, *to give credit*;
Faire envie, *to excite envy*.
Faire honneur, *to honour*;
Faire horreur, *to inspire horror*;
Faire peur, *to frighten*;
Faire mention, *to mention*;
Faire naufrage, *to suffer shipwreck*;
Faire place, *to make room*;
Faire plaisir, *to oblige*;
Faire présent, *to present*;
Faire réflexion, *to reflect*;
Faire tort, *to injure*;
Mettre fin, *to put an end*;
Mettre ordre, *to arrange*;
Perdre courage, *to lose courage*;
Porter envie, *to envy*;
Porter malheur, *to cause misfortune*;
Prendre congé, *to take leave*;
Prendre feu, *to catch fire*;
Prendre garde, *to take care*;
Prendre haleine, *to take breath*;
Prendre médecine, *to take medicine*;
Prendre racine, *to take root*;
Rendre compte, *to account*;
Rendre justice, *to render justice*
Rendre service, *to oblige*;
Rendre visite, *to visit*;
Tenir compagnie, *to accompany*;
Tenir lieu, *to take the place*;
Tenir parole, *to keep one's word*;
Trouver moyen, *to find means*;
Avec ardeur, &c., *with ardour*;
Par dépit, &c., *through spite*;
Pour récompense, &c., *as a reward*;
Sans peine, *without difficulty*;
Sans souci, *without sorrow* or *care*.

* Entendre *la* raillerie is also said, but it means *to understand joking*.

§ 83.—The Adjective.

(1.) We have seen [§ 18, Rule (3.)] that an adjective relating to two substantives of the same gender must agree with them in gender, and be put in the plural:

(2.) And Rule (4.) that an adjective, relating to two or more nouns of different genders, must be put in the masculine plural.

(3.) When, however, nouns, united or not by the conjunction *et*, are somewhat synonymous; when the writer wishes actually to qualify only the last; or when the mind, more particularly occupied with the last noun, seems to forget the others; the adjective will assume the gender and number of the last noun only.

Toute sa vie n'a été qu'un travail, qu'une occupation *continuelle*. Massillon.
His whole life has been nothing but continual labour and occupation.

Je ne connais point de roman, point de comédie *espagnole* sans combats. Florian.
I know no romance, no Spanish comedy, without combats.

Le fer, le bandeau, la flamme est *toute prête*. Racine.
The sword, the band, the flame is all ready.

(4.) Sometimes the adjective preceded by two or more substantives joined by the conjunction *et*, qualifies the last only. It must then, of course, agree with that noun only.

Le bon goût des Egyptiens leur fit aimer la solidité et la régularité toute nue. Bossuet.
The good taste of the Egyptians made them like solidity and unadorned regularity.

Le sourire est une marque de bienveillance, d'applaudissement, et de satisfaction *intérieure*. Buffon.
The smile is a mark of good-will, of applause, and of inward satisfaction.

§ 84.—Remarks on the Peculiarities of several Adjectives.

(1.) The adjective feu (*late, deceased*) is invariable, when placed before the article or adjective determining a noun, but varies when placed after the determining word:—

J'ai ouï dire à *feu* ma sœur, que sa fille et moi naquîmes même année. Montesquieu.
I have heard my late sister say, that her daughter and I were born the same year.

Le duc de. . . doit à la bienveillance dont l'honorait la *feue* reine, les bonnes grâces de l'empereur. De Salvandy.
The duke of . . . owes to the good-will of the late queen towards him the good graces of the emperor.

(2.) The adjectives nu, *bare*; and demi, *half*, are invariable when placed before the noun:—

Il était *nu*-tête; les pieds chaussés de petites sandales. Voltaire.
He was bare-headed; he wore on his feet small sandals.

Une *demi*-heure après avoir quitté le vaisseau, je foulai le sol américain. Chateaubriand.
Half an hour after having left the ship, I trod the American soil.

(3.) The adjectives *nu* and *demi*, when coming after the noun, agree with it:—

Accoutumez vos enfants à demeurer été et hiver, jour et nuit toujours tête *nue*. J. J. Rousseau.
Accustom your children to remain summer and winter, day and night always bare-headed.

Opimius paya la tête de Caius Gracchus, dix-sept livres et *demie* d'or Vertot.
Opimius paid for the head of Caius Gracchus, seventeen pounds and a half of gold.

(4.) The adjectives excepté, *except*; passé, *past*; y-compris, *including*; ci-joint, ci-inclus, *annexed, inclosed*; franc-de-port, *postage free*; come under the two last rules :—

Vous trouverez *ci-joint* la copie de la lettre que M. . . m'a écrite. J. J. ROUSSEAU.

You will find annexed the copy of the letter which M. . . has written to me.

Le dessin de cet oiseau m'a été envoyé d'Angleterre, avec la description *ci-jointe*. BUFFON.

The drawing of that bird came to me from England, with the description here annexed.

Vous trouverez *ci-inclus*, copie de ma lettre. DOMERGUES.

You will find inclosed, a copy of my letter.

Je vous recommande les cinq lettres *ci-incluses*. BERNARDIN DE ST. PIERRE.

I recommend to you the five letters inclosed.

J'ai reçu *franc*-de-port une lettre anonyme. J. J. ROUSSEAU.

I received, postage free, an anonymous letter.

Le Contrat social est imprimé, et vous en recevrez douze exemplaires, *francs*-de-port. THE SAME.

The Social Contract is printed, and you will receive twelve copies free of postage.

(5.) An adjective used adverbially, that is, modifying a verb, is of course invariable [§ 67, (3,)] :—

En Laponie, une peau d'hermine coûte quatre ou cinq sous; la chair de cet animal sent très *mauvais*. REGNARD.

In Lapland the skin of the ermine costs four or five sous; the flesh of this animal smells bad.

De ma vie je n'ai entendu des voix de femme monter si *haut*. MME. DE SÉVIGNÉ.

Never in my life have I heard women's voices sound so loud.

§ 85.—PLACE OF THE QUALIFYING ADJECTIVE.

(1.) No invariable rule can be given for the place of the adjective in French, although it *follows* the noun much more frequently than it precedes it.

(2.) The adjectives which are generally placed after the noun are :—

1. All participles present and past used adjectively;

une personne *reconnaissante*,	*a grateful person*;
une histoire *amusante*	*an amusing history*;
un enfant *chéri*	*a beloved child*;
de la viande *rôtie*	*roast meat.*

2. All adjectives expressing the form, the shape :—

une table *ronde*,	*a round table*;
une chambre *carrée*,	*a square room*;

(3.) Adjectives explaining the matter of which an object is composed :—

acide *sulfurique*,	*sulphuric acid*;
corps *aërien*,	*aerial body.*

(4.) Those expressing colour, taste, or relating to hearing and touching :—

un habit *noir*,	*a black coat*;
du fruit *amer*,	*bitter fruit*;
des sons *harmonieux*,	*harmonious sounds*:
de la cire *molle*,	*soft wax.*

(5.) Adjectives which may be used substantively :—

un homme riche,	*a rich man*;
une femme aveugle,	*a blind woman.*

(6.) Adjectives representing a nation* :—

une grammaire française,	*a French grammar*;
une dictionnaire allemand,	*a German dictionary.*

(7.) Adjectives expressing the defects of the body and mind;

un homme boiteux,	*a lame man*;
un esprit aliéné,	*an unsound mind.*

(8.) Almost all adjectives ending in *al, able, ible, ique*, and *if* :—

un homme libéral,	*a liberal man*;
une nation paisible,	*a peaceful nation*;
un esprit fanatique,	*a fanatical spirit*;
un soldat fugitif,	*a fugitive soldier.*

* The French often use the name of the country instead of the adjective of nation; particularly when speaking of the produce of the country :—

De la laine *d'Espagne*,	*Spanish wool*;
Du fromage *d'Angleterre*,	*English cheese.*

(9.) It must not be inferred from the rules above, that the adjective always comes after the noun. The deviations are quite frequent; and no other reason than taste can be assigned for them. We give a few examples, in which the same adjective is, by different authors, placed before and after the noun :—

Before the Noun

Jamais nous ne goûtons de *parfaite* allégresse. CORNEILLE.

We never enjoy perfect (unalloyed) pleasure.

Il fallut réveiller d'un *profond* sommeil cet autre Alexandre. BOSSUET.

It was necessary to rouse from a profound sleep that second Alexander.

Craignez, d'un vain plaisir les *trompeuses* amorces. BOILEAU.

Fear the deceitful allurements of a vain pleasure.

After the Noun.

Qu'a-t-il dit, qu'a-t-il fait,
Qui ne promette à Rome un empereur *parfait*?

What has he said, what has he done, which does not promise to Rome a perfect emperor?

Dans un sommeil *profond* ils ont passé leur vie. BOILEAU.

They spent their life in a profound sleep.

Le monde est une figure *trompeuse* qui passe BUFFON.

The world is a deceitful picture, which passes before us.

(10.) We find, however, in our best writers, few examples of a long adjective placed before a short noun; although they often place the adjective before the noun to give variety or force to the diction, they never, for instance, would say (in prose) *d'imaginaires lois*, for des lois imaginaires, *imaginary laws.*

(11.) The following adjectives when used in a literal sense, generally precede the noun: See § 144, Note :—

Beau, *fine, handsome*;	Mauvais, *bad*;
*Bon, *good*;	Méchant, *wicked*;
*Brave, *brave*;	Meilleur, *better*;
Cher, *dear (loved)*;	Moindre, *less*;
Chétif, *mean*;	Petit, *small*;
Grand, *tall*;	Saint, *holy*;
Gros, *large*;	Vieux, *old*;
Jeune, *young*;	Vrai, *true.*
Joli, *pretty*;	

Those marked with an asterisk are included in the following table.

§ 86.—LIST OF ADJECTIVES HAVING A DIFFERENT MEANING ACCORDING AS THEY PRECEDE OR FOLLOW THE NOUN.

Un bon homme, *a simple, artless man*;	Un homme bon, *a good, benevolent man* (un homme de bien);
Un brave homme, *a worthy man*;	Un homme brave, *a brave man*;
Une certaine histoire, *a certain story*;	Une histoire certaine, *a reliable story*;
Un cher enfant, *a dear child*;	Une robe chère, *an expensive dress*;
Une commune voix, *a unanimous voice*;	Une voix commune, *an ordinary voice*;
Un cruel homme, *a tiresome man*;	Un homme cruel, *a cruel man*;
La dernière année, *the last year (of a series)*;	L'année dernière, *last year*;
Une fausse clef, *a false key; an imitation key.*	Une clef fausse, *a key belonging to another lock (the wrong key)*;
Un furieux menteur, *an excessive liar*;	Un lion furieux, *a furious lion*;
Un galant homme, *a gentleman*;	Un homme galant, *a man attentive to the ladies*;
Un grand homme, *a great man*;	Un homme grand, *a tall man*;
Le grand air, *the air of good society*;	L'air grand, *a noble appearance*;
Le haut ton, *a haughty tone*;	Le ton haut, *a loud tone*;
Un honnête homme, *an honest man*;	Un homme honnête, *a polite man*;
Le jeune Pline, *young Pliny*;	Pline le jeune *Pliny the younger*;
Un malhonnête homme, *a dishonest man*;	Un homme malhonnête, *an unpolite man*;
Mauvais air, *awkard appearance*;	L'air mauvais, *malicious appearance*;
Un méchant livre, *a poor book*;	Un livre méchant, *a biting, caustic book*;
Morte eau, *lowest tides*;	Eau morte, *stagnant water*;
Un nouveau livre, *a new book (another book)*;	Un livre nouveau, *a book recently published*;
Un pauvre historien, *a wretched historian*;	Un historien pauvre, *a historian without pecuniary means*;
Un plaisant homme, *a ridiculous man*;	Un homme plaisant, *an agreeable man*;
Un petit homme, *a man of small size*;	Un homme petit, *a mean man*;

Mes propres mains, *my own hands*;
Un seul enfant, *a single child*;
Un simple soldat, *a private soldier*;
Un triste homme, *a pitiful man*;
Un unique tableau, *a single picture*;
Un vilain homme, *an ugly, unpleasant man*;
Une vraie histoire, *a mere story*;
Mes mains propres, *my clean hands*;
Un enfant seul, *a child alone*;
Un soldat simple, *a foolish soldier*;
Un homme triste, *a sorrowful man*;
Un tableau unique, *a matchless picture*;
Un homme vilain, *a sordid, miserly man*;
Une histoire vraie, *a true history*.

A KEY TO THE LATIN EXERCISES IN THE LATIN LESSONS.

By John R. Beard, D.D.

(*Continued from page* 87. *Vol. III.*)

The Fox and the Lion.

Fables of Æsop.

A fox who had never seen a lion, when by chance a lion met him, was so frightened that he almost died of terror. Having beheld the same lion a second time, he feared him indeed but by no means as before. When he met him the third time, he ventured even to go nearer and to address him.

The Crabs.

A crab said to his son; "My son do not advance with steps which are continually sidewise, but go straight forward." To whom he answered "Gladly, O my father, will I follow your words, if I first see you doing the same." This fable teaches, that youth is instructed by nothing more than by examples.

The Oxen.

Three oxen fed, with the greatest harmony, in the same meadow, and so were secure from every attack of wild beasts. But discord having arisen among them, they were severally attacked and torn to pieces by wild beasts. The fable teaches how much good there is in concord.

The Ass.

An ass, clad in a lion's skin, frightened men and beasts, as if he were a lion. But by chance, when he was moving rather too quickly, his ears protruded; and having been recognised by these, he was led away to a mill where he paid the penalty of his impudence. This fable refers to those stupid persons, who are proud of undeserved honours.

The Woman and the Hen.

A certain woman had a hen which laid her a golden egg daily. From this she began to suspect that the hen concealed within herself a mass of gold, and killed her. But she found nothing in her, save what is usually found in other hens. And so while she grasped at greater riches, she lost even the less.

Page 199, col. 2, vol. II.—Latin-English.

Take for granted that every day has shone upon you as the last; the judges were so inflamed by the reply of Socrates that they condemned to death a most innocent man; reason, when it is grown up and perfected, is rightly named wisdom; the question is, if a wise man has unknowingly received base for good coin, whether, when he has discovered it, he will pass it for good; it is incredible to relate how easily the Romans and the Aborigines have incorporated; when money is coveted, and reason is not immediately applied to correct that desire, that evil enters the veins and clings to the vitals; Endymion fell asleep, I know not when, on Latmus, a mountain in Caria, and has not yet awaked; an orator should abstain from words which, on account of their age have become obsolete; have you at length recovered from the disease under which you laboured so long? the vehemence of that orator, which before attracted and engaged the minds of all hearers, has now quite cooled down; my wound, which seemed to have already healed up, has now broken out afresh.

Page 199, col. 2, vol. II.—English-Latin.

Dies tibi illuxit supremus; dies fratri meo illuxitne supremus? stultis meis verbis pater exarsit; judices exardescere non debent; inter Romanos Carthaginesque terribile bellum exarsit; nostris hostibus omnia exoleverunt; illos adulterīnos nummos pro bonis accepisti? imprudens accepi; nunc id rescivi, nec eos pro bonis solvam; Romani et Aborigines brevi coaluerunt; Endymion in monte obdormiscet; in pulvino obdormivi; multa verba obsolevérunt, obsolescent multa verba; ardor tuus deferbuit; ardor meus non defervescet; vulnus recruduit; vulnera mea non consanuerunt; nescio an mei vulnera patris consanuerint.

Page 200, col. 1, vol. II.—Latin-English.

These words are inscribed on the king's tomb; he lived virtuously, he bound bad men, he conquered his enemies; the enemies having been conquered and bound with chains, were led away into slavery; authority ought to be supported by just laws; the king, having concluded a peace, sustained the tottering republic by his virtue; virtue is hard to find, and requires a ruler and a guide; innumerable arts have been discovered by the teachings of nature; life, if replete on all sides with good things, is said to be happy; the men have enclosed the cities by walls; hidden enmities are more to be dreaded than open ones; who is so wretched as not to have perceived the goodness of God? the gods, clothed in human form, furnished abundance of fables for the poets, but crammed the life of man with every kind of superstition; the hopes of the republic have been exhausted by continual wars; the more abundantly any one has drunk in pleasures from every quarter, the more deeply and eagerly will he thirst for them; I hope that you will agree with me; Cicero traced out the tomb of Archimedes, which was hedged in on all sides, and covered with briars and brambles; there is a report that Remus, in mockery of his brother, leapt over the new walls of the city; Lycurgus enacted nothing by any law for others, of which he did not first give example in himself; Hippias boasted that he had made the cloak with which he was clad with his own hand; we hope that peace will in a short time repair all the losses of war; by one victory he repaired all the losses previously incurred; when Cæsar learnt from the spies that the enemy was approaching, he immediately led out the soldiers from the camp; the cloud having been dispelled by the sun at the fourth hour, opened the day; Plato was buried in the Academy at Athens.

Page 200, col. 1, vol II.—English-Latin.

Rex, quum moreretur dixit, probe vixi; improbos vinxi; hostes vici; miles victus in vincula conjectus est; in servitutem abducentur; labefactam rempublicam fulcit; labefactam fulciet domum; ars scribendi reperta est; librum aperuérunt; vita mea apud bonos acta est; occultos timeo inimīcos; pace compositâ, domum revertar; felicitas difficilis est inventu; agricolae pratum dumetis sepserunt; campus dumetis vepribusque refertus est; exploratores adventant; Cæsar per exploratores comperit hostes adventare; sol oriens diem aperit; munificentiam Dei senserunt; pallium tuum tuâ manu confecisti? pallium quo amictus sum meâ manu confeci; curatio aegroti timores meos dispulit; captivus catenis vinctus huc venit; parricidii condemnatus est; improbi ludibrio fortunae sunt; rectoris Anglorum domus bonis affluenter referta est; probus rex belli detrimenta sarciet; regina poculum hausit; captivum vinxerunt; urbem intrabunt; inibuntne domum tuam? spero eos domum meam intraturos esse; compĕrérunt exploratores improbos esse; senatus legem sanxit; leges a senatu sanctae sunt.

Applications of Ago.

1. He, as a shepherd, leads the she-goats through unfrequented country places. 2. Let poems be delightful, and let them lead the mind of the hearer whither they please. 3. Many thousands of armed men having been driven out of that district into which he had been sent. The husband thrusts forth the adulteress from his house, and with a scourge drives her all through the village. 4. Where are you going? 5. If the army should be willing to march more quickly. 6. Wherever he went, he laid waste and plundered cities and fields. 7 That the eager dogs might hunt the stag. 8. The hurdles having been rapidly brought up to the town. At the same time the ships bore down on the opposing fleet. 9. A person unacquainted with ships is afraid to steer a ship 10. May he not drive these chariots. 11. He levied a public tax in Asia. 12. And he shall send forth from his mouth bloody foam. 13. For we say both animam agere (to drive out the soul) and efflare (to expire). 14. Oaks strike their roots far down. 15. The huts open in chinks. 16. The husbandman was driven headlong to glory. Vengeance drives him headlong. 17. Merciless fates pursue the Romans. 18. He pleaded this cause before the judges. 19. Augurs are said to take an augury. 20. He can compose something, but not perform it; as the poet writes a play, but does not act it; on the other hand, the actor personates the characters but does not write; and thus the play is written, not acted by the poet; by the actor it is acted not written. 21. Scipio Africanus was wont to say that he was never doing more than when he was doing nothing; that he was never less at leisure than when he was at leisure. There is one time for acting, and another for resting. 22. You have no effect, O Grief, although you are troublesome, I will never confess that you are an evil. They endeavour to extort from us by fear, but they effect nothing. 23. Consider whether you prefer to state in conversation, or to carry on by cor-

respondence what you wish. 24. My mind is considering something or other unusually great. 25. Say that I am thankful to the king. 26. When my father was in ill health, he generally spent his time here in literary pursuits. I am in my 84th year. 27. Who determined to carry on war in a way far different from the rest of the Gauls. 28. Recollect, I pray, what I said in the senate concerning you. When you were treating of our dignity. 29. To plead with the people is to ask for what the people either order or forbid by their votes. Concerning which I in person carefully treated with you. 30. He accused them of theft. The point at issue now is not money, but this, how, &c.. The wrongs of our allies, the power of the laws, our credit, and the equity of the judges are at stake. The glory of the Roman people and the safety of our allies are at issue. 31. Which sentiments, it was allowed, were so delivered by him, by his eyes, his voice, and his gestures, that the tears of his antagonist could not restrain themselves. 32 With so much fickleness do the Numidians behave themselves, that the more savagely they acted before, the more eagerly they drank in the unwonted pleasures.

N.B. The following is a literal rendering of Martial's epigram, and of course does not preserve the point of the original.

You are always pleading causes, always conducting business, O Attalus,
Whether you have any thing to do or not, you, O Attalus, are still doing,
If business and causes fail, you drive your mules, O Attalus,
O Attalus, that you may not want occupation, drive (off) your soul.

Page 243, col. 1, vol. II.—LATIN-ENGLISH.

Proceed, O boys, and zealously apply yourselves to that pursuit in which you are engaged, that you may be able to be both an honour to yourselves, a benefit to your friends, and an advantage to the republic; no one is so fierce that he cannot become gentle; meditate on this daily, that you may be able to die with a composed mind; some persons think that God does not exist, because he neither appears nor is perceived; just as if we were able to see our own mind; when we behold the universe, can we doubt that some creator and governor presides over it? nothing is so difficult that it cannot be found out by inquiry; we must so direct our thoughts, as if some one were able (and some one is able) to behold our inmost heart; we ought to be fully persuaded, that even though we may be able to conceal it from God and mankind, yet no unjust thing should be done by us; can you doubt that God governs the universe; we cannot; why cannot you walk with us? Alcibiades could not endure that Athens should be subject to the Lacedaemonians; Marcellus commanded first the infantry, and then the cavalry, to burst forth upon the enemy with as much impetuosity as they were able; Agesilaus did not cease to aid his country by whatever means he could; Cæsar led the army against the enemies by forced marches; it is chance, when any thing happens in such a manner that it might either not have happened or happened differently; all parts of the world have been so constituted, that they could neither have been better (adapted) for use, nor more beautiful in appearance; the mind is seized with anger, before it has been able to provide sufficiently against being seized; Cæsar had scarcely been able to lead out the soldiers from the camp, when the enemy made an attack; why should I enumerate the multitude of arts, without which all life could have been nothing; him whom we can induce to lie, we shall easily prevail upon to swear falsely; if I cannot subdue my grief, I will conceal it; it is easily understood that neither the form and position of our members, nor the force of our natural disposition and intellect, could have been created by chance; in the first place I am sensible of this, that friendship cannot exist save among the good.

Page 243, col. 2, vol. II.—ENGLISH-LATIN.

Scelus Deum possumus non celare; non potestis dubitare quin universus mundus ab animo gubernetur; potestne mundus ex nihilo esse? ex nihilo nihil fieri potest; quid ex confusis molibus fieri potest? potestne ordo ex casu fieri? bonos puniri non poterant pati; domum revertam quam potero maximâ celeritate; domum revertent quam maximâ poterint celeritate; ante comprehensus sum quam loqui potui; pulchrior esse mundus non potest; possuntne illae mulieres pulchriores esse? librum tibi dabo, si potero; frangere dolorem non poterat, sed poterit occultare; amicitia nisi in bonis esse non potest; si venire potuissem, omnia tibi dixissem; nisi venire potuissent, nihil scivissemus; potesne ambulare? cras ambulare potero; sine artibus, hominum vita esse non posset.

Page 243, col. 2, vol. II.—LATIN-ENGLISH.

It is necessary for us to eat, that we may live; not to live, that we may eat; eat and drink moderately; some young men assembled yesterday to enjoy a picnic; this herb is bitter to eat; grief lacerates, corrodes, and completely wears down the mind; cornworms begin to eat up the corn; quicksilver corrodes and breaks through vessels; our forefathers could not prevent age from corroding monuments; what mass was ever so firm that the waves could not wear it away? woe to you who consume all your substance in luxury! the fables relate that Saturn was accustomed to devour his children; for age consumes the spaces of time.

Page 243, col. 2, vol. II.—ENGLISH-LATIN.

Saturnus liberos ex se natos haud comedit; putasne Saturnum liberos ex se natos comedisse? undae saxa exedunt; vivis ut edas; esse debes ut vivas; modice edunt; rus ibimus ut de symbolis edamus; hic panis acerbus est esu; curculiones frumentum exedérunt; vetustas omnia consumit; aegritudo animum exedet, vitamque conficiet; modice ederunt et biberunt; sapiens modice edet.

CORRESPONDENCE.

GWEN CYMRAES, *Llanbadarnfawr*, a clever correspondent writes thus:—"I have studied the French Lessons from the 'Working Man's Friend,' the 'Manual,' and the 'Educator,' and I send you a list of words all of which are either pronounced or spelt almost exactly the same in the Welsh language as in the French. This may be a little help to a Welsh person studying French."

To our correspondent's list we have added the Welsh, for the sake of our English readers, and the ancient source of most of the words.

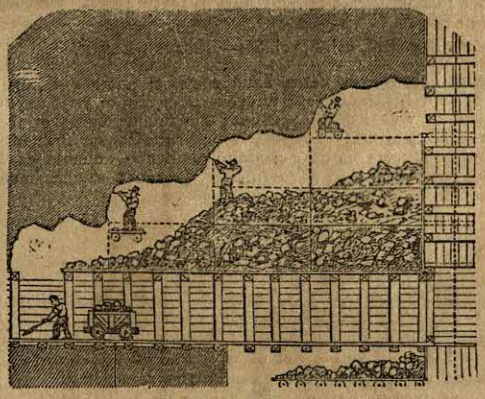
French.	*English.*	*Welsh.*	*Source.*
Bras	Arm	Braich	Βραχιων. *G.*
Taureau	Bull	Tarw	Ταυρος. *G.*
Fenêtre	Window	Ffenestr	Φαινω. *G.*
Putain	Harlot	Putain	Πυθω. *G.*
Cheval	Horse	Ceffyl	
Mer	Sea	Môr	Mare. *L.*
Paque	Easter	Pasc	Pasach. *H.*
Coffre	Chest	Coffr	Kaphar. *H.*
Couteau	Knife	Cyllell	Culter. *L.*
Miel	Honey	Mêl	Μελι. *G.*
Livre	Book	Llyfr	Liber. *L.*
Colombe	Dove	Colomen	Columbus. *L.*
Four	Oven	Ffwrn	Πυρ. *G.*
Cire	Wax	Cwyr	Κηρος. *G.*
Moulin	Mill	Melin	Μυλη. *G.*
Sabon	Soap	Sebon	Sapo. *L.*
Douleur	Pain	Dolur	Dolor. *L.*
Triste	Sad	Trist	Tristis. *L.*
Boue	Dirt	Baw	
Toit	Roof	Tô	Tectum. *L.*
Dent	Tooth	Dant	Dens. *L.*
Cor	Horn	Corn	Keren. *H.*
Mille	Thousand	Mil	Mille. *L.*
Argent	Silver	Arian	Argentum. *L.*
Tas	Rick	Dâs	Dosh. *H.*
Ecrivain	Writing	Ysgrifen	Scribo. *L.*
Ecole	School	Ysgol	Σχολη. *G.*
Couronne	Crown	Coron	Κορωνη. *G.*
Secher	Dry	Sych	Siccus. *L.*
Clocher	Steeple	Clochdy	

In the fourth column of the preceding list, the letter G. means *Greek*; L. *Latin*; and H. *Hebrew*; these being the principal sources of our modern languages in Europe. We do not deny, however, that there may be many original words belonging to the Welsh, and to several other languages of ancient Britain and Ireland. In the preceding list such words appear to be very few, if any; but our old friend Dr. Benjamin Davies, late President of Stepney College, was the best hand we ever knew or heard of, to find out the analogies of the Welsh and the Hebrew languages; and he has shown traces of this in his excellent translation of Gesenius's Hebrew Grammar, published by Messrs. Bagster and Sons, Paternoster-row, a work which we can safely recommend from our knowledge of his learning, honesty, and piety, to all students who wish to acquire a knowledge of the oldest language in the world.

LESSONS IN MECHANICS.—No. XXV.

MINING OPERATIONS (*continued*).

THE excavations of a mine may be divided into shafts, galleries, and chambers. Sometimes the inconsiderable width both of shafts and galleries renders foreign support unnecessary, and they are allowed to stand by themselves; but in most instances they require to be propped or stayed, and the three modes by which this is

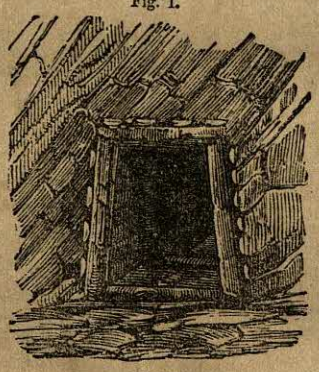


WORKING A MINE.

accomplished are respectively known as timbering, walling, and filling up. Timbering consists in the use of billets of wood; walling in the use of bricks and stone; and filling up is merely the stuffing of the space with rubbish.

The first, or *timbering*, is that which is most generally employed. There are various methods of timbering, each dependent on or arising out of the condition of the mine. With regard to galleries, for example, it is sometimes necessary only to support the roof; sometimes the roof and one of the walls. Sometimes it is necessary to form a complete frame, flooring beams, stanchions, ceiling beams, &c. Sometimes, when a gallery is to serve for several purposes, it is necessary to employ a double flooring—one over which the ores may be transported, and under which the water drained from the depths may be discharged.

Fig. 1.



LEVEL.

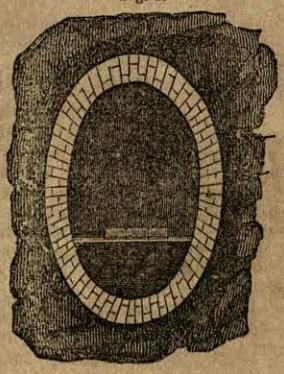
Shafts, stayed with timber, are usually made square or rectangular. The spans of the timber work are about eight inches in diameter, and placed at a distance of from a yard to a yard and a half. Only under very great pressure of earth and water are the spans placed together. The framework is generally united by a half check, the longer of the two pieces extending beyond the angle, and resting on the rock.

In shafts which are used for the double purpose of extracting the ore, the descent of the miners and the discharge of the waters, the spaces appropriated to these several purposes are separated by partitions: this serves to increase the strength of the timberings.

Brick or stone, with or without mortar or cement, is sometimes employed for walling in preference to timber. Although more expensive at the outset, it lasts longer. The ordinary level, with its timber framework, is shown at Fig. 1; a brick circular gallery is given at Fig. 2. Here the stability of the principle of the arch is well exhibited.

Rubbish may also be used, and is used sometimes with advantage, in filling up galleries that have been worked, or that are to

Fig. 2.



CIRCULAR GALLERY.

be worked. One of these galleries, filled up with rubbish for centuries, was re-opened in France, and the level was found in all respects perfect.

In the ventilation of collieries, a horizontal funnel is sometimes placed at the top of the air pipes, considerably above the level of the pit's mouth. The funnel is made to revolve on a pivot, and to receive the wind from whatever quarter it may blow.

Another method employed is that of placing coal fires at the bottom of the upcast pit. Furnaces are used in very deep and extensive collieries. The size of the furnace is proportionate to the magnitude of the ventilation, and the chimneys are either round or square.

ANSWERS TO CORRESPONDENTS.

STUDENT.—In the material universe every change or modification of matter affects the whole mass. This is well known. The simplest illustration is casting a stone into a lake; every particle of the water is moved by the increasing circle, which has for its centre the spot where the stone went down. So it is with everything else. A word *spoken* is a material thing; it sets in motion the particles of air. The motion is carried on from one particle to another; every particle is set in motion. There is a material movement in the whole atmosphere with every spoken word. The language of Hitchcock, which you quote, is much to the purpose:—"Every impression which man makes by his words, or his movements, upon the air, the waters, or the solid earth, will produce a series of changes in each of those elements which will never end. The word which is now going out of my mouth causes pulsations or waves in the air, and these, though invisible to human eyes, expand in every direction, until they have passed around the whole globe, and produced a change in the whole atmosphere; nor will a single circumgyration complete the effect, but the sentence which I now utter shall alter the whole atmosphere through all future time."

J. RUSSELL.—There is no question as to the simplicity of spelling by sound; but an adoption of the system generally would entirely overturn all our preconceived notions of orthography. We must have new letters, and we must dispense with some old ones; every letter must in every position retain one character, and possess one power: *g* must be always *g* soft or *g* hard, *g* long or *g* short, and not all these, according to the position in which it stands in connection with other letters. The system of shorthand writing which is now being given in our paper is, to our minds, the *best* system published; but we have no desire to enforce it as the rule for ordinary writing and spelling. The subject, as you say, however, demands more serious attention than it receives.

EN AVANT.—We are much interested in the sketch of your life, to which, we doubt not, you will yet have to add many valuable chapters. You have every prospect of success in the examination to which you refer. Our "Lessons on Geology" will materially help you with that science; the "Progress of English Literature" in our "Biblical Educator," may help you with that topic. Your handwriting is excellent.

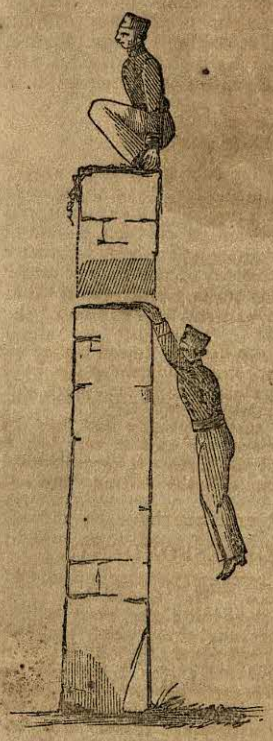
F. L. JAMES.—See our reply to J. Russell.

F. D. JONES.—Theoretically, phonetic spelling is unquestionably the best; practically, it is attended with many difficulties. In order to employ it, our alphabet must be re-constructed, and the characters increased in number, and changed in form.

LESSONS ON PHYSICAL EDUCATION.—No. VI.

(*Continued from page* 303.)

Fig. 26.



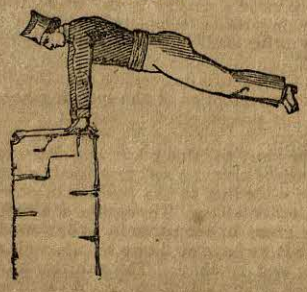
Exercise 14.—Leaping backwards, with the hands as the point of support. The pupil in this exercise is on a wall, or a similar elevation; he judges, by a glance of the eye, the distance he has to leap, and the place where he has to land; he then turns round, places his feet together as before, near the edge of the wall, and bends his legs as low as possible, leaning his body considerably forwards; he next places his hands on the edge of the wall, with the thumb behind, and the four fingers in front. The words of command then are:

1. *One!*
2. *Two!*
3. *Three!*

At the word *One*, the pupil, without moving his hands, slightly raises himself on tiptoe. At the word *Two*, he repeats this movement. At the word *Three*, he does the same, then slips from the wall, throws his legs behind, straightens his legs and body, detaches his hands from their point of support, performs the leap, reaches the ground with his arms above his head, and drops upon his feet, bending his legs and recovering his position, as in former exercises. Fig. 26.

Exercise 15.—This leap may also be performed horizontally to some extent, by swinging the body backwards at the moment of throwing the feet off the wall, and pushing the legs as much as possible in the same direction. Fig. 27.

Fig. 27.



Leaping with the pole is our next exercise. In this exercise the pole usually employed is made of ash very sound, but thin. It is slightly coniform, and its length is adjusted to the height of the pupil, and to the space to be cleared in the leap. This exercise is twofold; horizontal and vertical.

Exercise 16.—This exercise is performed individually, and without the word of command. The pupil takes hold of the pole, at a place above his head, with his right hand, thumb upwards, and with his left hand at a place nearly the height of his haunch, thumb downwards, separating his feet to a distance of about twenty-four inches. The pupil, then standing about fifteen paces from the ditch or space he is to clear, he takes a run, holding the lower extremity of the pole before him; when he reaches the starting point, he plants his pole

Fig. 28.

some distance forwards, and by a sudden and violent motion of his legs, springs from the ground, with his hands resting on the pole, turns round from right to left, clears the space with his body nearly in the horizontal position, and alights

Fig. 29.

upon the ground in a manner similar to that of former exercises. The greater the distance is that is to be leaped, the greater must be the distance between the bottom of the pole and the position of the pupil's hands. This exercise must of course be commenced with distances short at first, and their length must be gradually increased. When the pupil has become perfect in this exercise, with the right hand uppermost on the pole, he may then learn to practise it with the left hand uppermost; in this case, the body in leaping will

be turned round in the opposite direction to that above described. Fig. 28.

Exercise 17.—Leaping upwards with the pole. The principles employed in this exercise are the same as in the preceding, with this difference, that the force of impulsion from the lower extremities is in a direction nearly vertical, and that it describes a parabolic line, owing to the nature of gravity. During the performance of the exercise, the body must be placed, as to its length, nearly perpendicular to the pole. The force of impulsion given by the arms and the legs must also be proportional to the height which is to be leaped. Fig. 29.

III.—CLIMBING AND DESCENDING BY MEANS OF ROPES, CORDS, &c.

Exercise 1.—Ascending or descending a knotted rope. This exercise is performed individually, and without the word of command. In ascending, the pupil takes hold of the rope as high as possible, with his hands one above another, and close together; he then draws up his body by the muscular power of his arms, his legs hanging straight, and his heels close together; on meeting with one of the knots as he draws up his feet, he makes it a point of support, and takes a higher hold of the rope with one hand after another, bringing them close together, as before. This alternate action of the feet and hands enables him to ascend the rope till he reaches the top. During the performance of this exercise, the pupil must avoid all jerks and sudden shocks. The knotted rope is descended by the pupils by just reversing the preceding operations. Fig. 30.

Exercise 2.—Ascending and descending a smooth rope. This exercise is also performed individually, and without the word of command. Here the pupil takes hold of the rope as above described; he then twists the rope round his right leg from right to left, so that it passes along the calf and the ankle; he now holds it firmly by placing the sole of the left foot on the right ankle, so as to make it a point of support for enabling him to take a higher hold of the rope; this done, he raises his body by the power of his arms, the rope slides between his legs, and is again firmly held by the feet as before. These alternate movements of the feet and hands enable the pupil to reach the top of the rope, as in the last exercise. The pupil descends the rope by allowing it to slide between his feet, and by moving his hands alternately the one below the other. Fig. 31.

During this exercise, the nearer that the pupil can keep his legs at a right angle with his trunk the better; as thus the friction of the rope round the leg is increased, and the hold on the rope, as a point of support, more firm; but the velocity of ascent and descent, particularly the latter, will be considerably diminished. The nearer the trunk and the legs are to a straight line, the more difficult will it be to obtain a point of support, and the greater will be the velocity of descent.

Another exercise is ascending the smooth rope by the muscular power of the arms only; a more difficult one, and only adapted for those who possess this power in a great degree. The pupil in this exercise passes the rope between his legs slightly twisted, with his toes pointed downwards.

Exercise 3.—Climbing the pole. This exercise is performed individually, and without the word of command. The pupil takes hold of the pole as high as possible with his hands, raises his body by the power of his arms, bending both it and his legs; he then puts his right leg before the pole, turning his ankle round it; he next places the calf of the left leg behind the pole, with the heel resting on it, and thus forms a point of support with his legs. He now raises his arms in order to take a higher hold of the pole. By this alternate motion he accomplishes his ascent. The same exercise may be performed by changing the legs and feet in the operation. Fig. 32.

SPHERISTICS.

Exercise 1.—Throwing a projectile or ball which can be held in the fingers. The ball being placed on the ground at a short distance from the feet, the words of command are:

1. *Take the ball in the right hand (or left)!*
2. *In position!*
3. *Throw! One!*
4. *Two!*
5. *Three!*

At the *first* words of command, the pupil stoops, takes the ball in his right hand, and resumes his position. At the *second*, he throws the right foot about twenty inches behind the left, and the right hand about eight inches behind the ear; the left arm being allowed to fall naturally with the hand near the left thigh. At the *third*, the pupil takes aim, throwing the right arm quickly forward, and then resumes the position of the *second*. At the *fourth* he repeats this movement. At the *fifth* and *last*, he performs the same movement, but with all his force throws the ball forward, stretching his right leg and pressing the ground with his toes; he then resumes his first position. Throwing with the left hand is performed in a similar manner. Fig. 33.

SWIMMING.

Swimming is the locomotion of the human body in water; it is the faculty which man acquires of making progressive motion in a fluid. An important principle, which is not well understood by those who have written on this art, is that of knowing whether the density of the human body is greater than, equal to, or less than the density of the bulk of water which it displaces on immersion in water. It is evident that if the density of the human body is greater than that of the fluid, the body will sink in it, and will descend to the bottom of the vessel which contains it with a force proportional to the difference between the densities of the body and the fluid; if these densities be equal, the body will float in the fluid, but not above it; and if the density of the body be less than that of the fluid, the pressure of the fluid which surrounds the body will push it upwards with a force proportional to the difference between the densities of the body and the fluid which it displaces. In the latter case, the body, by an ascending movement, will rise above the fluid until the bulk of the part immersed represents a weight of the fluid equal to the weight of the body.

From a consideration of these remarks, it is obvious that a man, whose weight of body is always the same, and who possessed the power of increasing or diminishing his bulk, could keep himself above, in the middle, or at the bottom of a vessel of water, according as he increased, preserved, or diminished his natural size, that is, according as the quantity of water he displaced weighed less than, equal to, or greater than his body. Fishes possess this power; they keep themselves easily in any position, and at all depths in their native element. Nature has provided them with a reservoir of air surrounded by a membrane which has the power of contracting and expanding, and consequently of increasing or diminishing their bulk. When a fish rises in water, it distends the muscles which compress this bladder, commonly called the *swim*, it then increases its bulk without increasing its density, and reaches the surface; when it goes to the bottom, it produces a contrary effect on the same organ.

Man, according to his physical constitution, will float on the surface, sink to the bottom, or occupy all intermediate positions. Thus, a man of an athletic constitution, with protuberant and well-developed muscles, has a great density under a small bulk; he will sink to the bottom of the water. A man of a fat constitution, whose obesity is developed, with flabby, soft, and spongy flesh, has great bulk with small density; he will float on the surface of the water. Intermediate constitutions will sink more or less according as their constitution lies between these two.

Among all nations, bathing and swimming have been resorted to as a means of preserving health and strengthening the constitution. Hence the Greek fable of Achilles, the son of Thetis, having been dipt into the sea, to render him as unwearied in the chase as he was invulnerable in war. By bathing every day in the year in the icy water of the lakes and rivers which surround his hut, the young Iroquois acquires that vigour of constitution which renders him proof against fatigue and disease. Bathing is also used for the purpose of imparting to children a strong and vigorous constitution, and removing from them the weaknesses which commonly accompany slender, feeble, and debilitated constitutions.

Fig. 30.

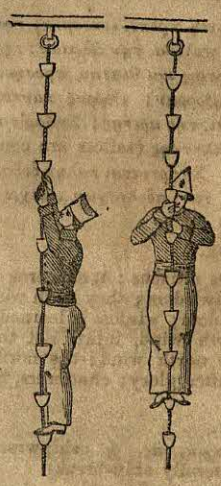


Fig. 31.

The most eminent writers who have treated of the physical education of man, such as Locke, Buffon, Tissot, Fourcroy, Rousseau, and others of a later period, consider bathing in cold water during infancy as a means of securing good health in after life. Among the Romans, the exercise of swimming took place every day of the year, winter not excepted; they judged this practice so necessary, says Locke, that they put it on a level with literary knowledge: for, in order to denote a badly-educated man, a good-for-nothing (Scotticè, *a ne'er-do-weel*), they commonly said, *nec litteras didicit, nec natare*; he has neither learned *to read, nor to swim*.

After the example of those Romans who, having escaped from battle, covered with sweat and dust, went and threw themselves into the Tiber in order to renew their strength; so should the pupils be accustomed to throw themselves into water ready equipped; then, to undress, and to swim with one hand, holding their clothes in the other above the water. It was thus that Cesar and Camoens did, when they were shipwrecked, holding above the waves, the one his *Commentaries*, and the other his *Lusiad*.

Before going into the water to perform the exercises of bathing or swimming, certain hygienic principles must be taken into consideration, our physical constitution in these days having become degenerated by our effeminate manners, the consequence of our so-called civilisation. We cannot, therefore, give ourselves freely to these exercises in all seasons, at all times, and in all places. After a storm, water is found to contain a variety of organic substances in decomposition, and contracts the noxious qualities of a marsh; and although no faith is to be put in the specially injurious nature of the Dog-star, and its accompanying sultry weather, yet it is prudent to abstain from the exercise of swimming when the sun, with all his force, darts his rays almost vertically on the ground. Otherwise, there might arise from its undue use, erysipelas, inflammation of the neck, with swellings and tumours of various kinds, as consequences which might have

Fig. 32.

been avoided. The middle of the day is not the most favourable time for this exercise; it should be performed in

Fig. 33.

the morning before breakfast; and better still, in the evening before supper. The water should not be entered when the body is in a state of perspiration, but only when it is perfectly cool. As soon as possible, also, the whole body should be immersed from head to foot. The exercises will be described in our next lesson.

LESSONS IN GREEK.—No. V.

By John R. Beard, D.D.

Vocabulary.

Αστραπη, ης, ἡ, lightning.
Βροντη, ης, ἡ, thunder.
Ατιμια, ας, ἡ, dishonour.
Βασιλεια, ας, ἡ, a queen.
Βασιλεία, ας, ἡ, a kingdom.
Βλαβη, ης, ἡ, injury.
Γλωττα, ης, ἡ, a tongue, speech.
Διαιτα, ης, ἡ, manner of life, (*Eng.* diet.)
Δοξα, ης, ἡ, glory.
Νυνομια, ας, ἡ, regard to law.
Μεταβολη, ης, ἡ, change.
Στολη, ης, ἡ, a robe.
Τυχη, ης, ἡ, fortune, fate.
Εσθλη, good, honest.
Καλη, beautiful.
Λαμπρα, shining, splendid.
Σκολια, crooked, wrong.
Ευθυνω, I make straight, make right.
Κατεχω, I hold back.
Πιπτω, I fall.
Φερω (*Lat.* fero), I bear.
Ραδιως, easily.

Exercises.—Greek-English.

Τῃ κακιᾳ ατιμια επεται; ῥαδιως φερε την πενιαν; βροντη εκ λαμπρας αστραπης γιγνεται; ἡ αρετη εσθλην δοξαν εχει; ευνομια ευθυνει δικας σκολιας; δικη δικην τικτει και βλαβη βλαβην; αγαθην διαιταν αγε; κατεχε την γλωτταν; ἡ τυχη πολλακις μεταβολας εχει; την πενιαν φερετε; αἱ λαμπραι τυχαι ραδιως πιπτουσιν; φερε τας τυχας; ἡ αρετη ουκ εικει ταις τυχαις; απεχεσθε των χαλεπων μεριμνων; ἡ βασιλεια λαμπραν βασιλειαν εχει; ἡ στολη εστι καλη; καλας στολας εχομεν.

English-Greek.

Flee cares; baseness begets dishonour; virtue follows fame; they bear poverty easily; poverty is borne easily; you bear poverty easily; thou hast changes; abstain from baseness; they have a beautiful robe; do not yield to fortune; they yield to fortune readily; do ye restrain (*hold back*) the tongue, (that is, in English, *your tongue*); wrong judgments are made right.

Having in the previous lesson treated of feminine nouns of the first declension, I now pass on to

MASCULINE NOUNS OF THE FIRST DECLENSION.
EXAMPLES.

	A Citizen.	*Mercury.*	*A Youth.*
S. N.	πολῖτης	Ἑρμῆς (εας)	νεᾶνιᾶς
G.	πολίτου	Ἑρμοῦ	νεᾱνιου
D.	πολίτῃ	Ἑρμῇ	νεᾱνιᾳ
A.	πολίτην	Ἑρμῆν	νεᾱνιᾶν
V.	πολῖτα	Ἑρμῆ	νεᾶνια
P. N.	πολῖται	Ἑρμαῖ	νεᾱνιαι
G.	πολίτων	Ἑρμῶν	νεᾱνιων
D.	πολίταις	Ἑρμαῖς	νεᾱνιαις
A.	πολίτᾱς	Ἑρμᾶς	νεᾱνιᾶς
V.	πολῖται	Ἑρμᾶι	νεᾱνιαι
D. N.A.V.	πολίτᾱ	Ἑρμᾶ	νεᾱνιᾶ
G.D.	πολίταιν	Ἑρμαῖν	νεᾱνιαιν

N.B.—In pronouncing Greek, as in Latin, the rule is to accent dissyllables always on the first syllable, and words of more than two syllables on the last but one, if it is long; but if short, on the last but two.

The vocative of such nouns as have ης in the nominative singular ends in α in the following cases; namely, 1. in all nouns in της, as τοξοτης, *an archer*, vocative τοξοτα: προφητης, *a foreteller, a prophet*, vocative προφητα: 2. in all substantives in ης compounded of a substantive and a verb, as γεωμετρης, *a land-measurer, a geometrician*, vocative γεωμετρα; μυροπωλης, *a perfumer*, μυροπωλα; 3. in names of nations in ης, as Περσης, *a Persian*, Περσα.

Several nouns in ᾱς have the genitive that is customary in the Doric dialect,* ending in ᾶ, *e. g.*, πατραλοιᾶς, ᾶ *the slayer of a father*; μητραλοιας, ᾶ, *the slayer of a mother*; ορνιθοθηρας, ᾶ, (also ου), *a birdcatcher*; also several proper names, as Συλλας, ᾶ, *Sylla*; finally, contracted nouns in ᾱς, as Βορρας (from Βορεας) genitive Βορρᾶ, *the north wind*.

According to these models decline adjectives of one termination, in ης and ας; *e.g.* εθελοντης πολιτης, *a willing citizen*; μονιας νεανιας, *a lonely youth*, e. g.,

A masculine noun and adjective of the First Declension are inflected thus:—

εθελοντης ἀροτης, a willing ploughman.

S. N.	εθελοντης αροτης, a willing ploughman.
G.	εθελοντου αροτου, of a willing ploughman.
D.	εθελοντῃ αροτῃ, to or by a willing ploughman.
A.	εθελοντην αροτην, a willing ploughman.
V.	εθελοντα αροτα, O willing ploughman.
P. N.	εθελονται αροται, willing ploughmen.
G.	εθελοντων αροτων, of willing ploughmen.
D.	εθελονταις αροταις, to or by willing ploughmen.
A.	εθελοντας αροτας, willing ploughmen.
V.	εθελονται αροται, O willing ploughmen.
D. N.A.V.	εθελοντα εροτα, two willing ploughmen.
G.D.	εθελονταιν αροταιν, of two willing ploughmen.

VOCABULARY.

Αδολεσχης, ου, ὁ, a chatterer.
Ακροᾱτης, ου, ὁ, a hearer.
Θεᾱτης, ου, ὁ, a spectator (*Eng.* theatre.)
Δεσποτης, ου, ὁ, a master (*Eng.* despot.)
Ναυτης, ου, ὁ, a sailor.
Τρυφητης, ου, ὁ, a voluptuary.
Σπαρτιᾱτης, ου, ὁ, a Spartan.
Συβαρῖτης, ου, ὁ, a Sybarite.
Ευκοσμια, ας, ἡ, decorum, politeness.
Ησυχῖα, ας, ἡ, tranquillity; ἡσυχιαν αγειν, to be quiet.
Θαλαττα, ης, ἡ, the sea.
Σοφια, ας, ἡ, wisdom.
Τεχνη, ης, ἡ, art.
Ακουω (with Gen. or Acc.), I hear.
Βλαπτω, I injure.
Μανθανω, I learn.
Μελει (with Gen. of the thing, and Dat. of the person), it concerns; μελει μοι, I have to do with.
Πρεπει, it becomes, it is proper.
Προσηκει, it is suitable.
Ορεγομαι, I reach towards, strive after (with Gen.)

* The "Doric dialect" was a form of the Greek tongue employed by the Dorians. As Greece was divided into several small states, so there were several dialects, such as the Doric, the Ionic, the Attic. These dialects must be distinguished from our provincialisms, for they were in their own locality severally classical. The Attic, however, is the generally recognised form of the Greek tongue; and the writings of Xenophon (Attic) are accounted *the* model for prose in Greek, as Cicero's writings are held to be *the* model for Latin prose.

EXERCISES.—GREEK-ENGLISH.

Μανθανε, ω νεανια, την σοφιαν; πολιτῃ πρεπει ευκοσμια; την νεανιου αδολεσχιαν ψεγομεν; φευγε, ω πολῖτα, την αδικιαν; την ορνιθοθηρα τεχνην θαυμαζομεν; ακροαταις και θεαταις προσηκει ἡσυχιαν αγειν; φευγετε, ω ναυται, βορραν; βορρας ναυτας πολλακις βλαπτει; ορεγεσθε, ω πολῖται, της αρετης; Συβαρῖται τρυφηται ησαν; ναυταις μελει της θαλαττης (sailors are concerned with the sea); φευγε, ω Περσα. Σπαρτιαται καλην δοξαν εχουσιν; φευγω νεανιαν τρυφητην; των αδολεσχων απεχου; ακουε, ω δεσποτα.

ENGLISH-GREEK.

Flee, O Persians; wisdom becomes citizens; it concerns a citizen to be quiet; O youths, learn wisdom; they learn wisdom; you learn wisdom; I learn wisdom; wisdom is learned; decorum becomes a youth; O north wind, injure not the sailor; O sailor, avoid (φευγω) the north wind; the north wind is avoided; O Spartan, strive after glory; chatterers, be quiet; abstain from a chatterer.

VOCABULARY.

Εραστης, ου, ὁ, a lover, a friend.
Κλεπτης, ου, ὁ, a thief.
Κριτης, ου, ὁ, a judge.
Οικετης, ου, ὁ, a servant.
Στρατιωτης, ου, ὁ, a soldier.
Τεχνῖτης, ου, ὁ, an artist.
Ψευστης, ου, ὁ, a liar.
Δικαιοσῦνη, ης, ἡ, justice.
Ναυαγια, ας, ἡ, shipwreck (literally ship-break)
Θαυμαστη, admirable.
Τρεφω, I nourish, bring up
Μαχομαι, I fight.
Επιμελομαι, (with Gen.) I care for.
Εστι (with Gen.) it is the duty of.

EXERCISES.—GREEK-ENGLISH.

Ἡ Σπαρτιατων αρετη θαυμαστη ην; φευγε, ω νεανια; φευγετε, ω εραστα; οι κλεπται φευγονται; κριταις πρεπει δικαιοσυνη; εστι των στρατιωπων περι των πολιτων μαχεσθαι; φευγε ψευστας; εστι δεσποτου ετιμελεσθαι των οικετων; μη πιστευε ψευστῃ; τεχνῖτην τρεφει ἡ τεχνη; εκ ψευστων γιγνονται κλεπται; Σπαρτιαται δοξης και τιμης εραστα ησαν; εκ βορρᾶ πολλακις γιγνεται ναυαγια; θαυμαζομεν την Ἑρμου τεχνην.

ENGLISH-GREEK.

The lovers of glory flee not; liars are not lovers of virtue; the virtue of the Spartan was admirable; O Spartans, believe not liars; the art of (Mercury) Hermes was admirable; we admire the virtue of the Spartans; O Spartan, avoid a liar; it is the duty of a master to care for his servant; it is the duty of servants to care for masters; the arts nourish the artists; it becomes the soldiers to fight for the citizens; be quiet, O northwind; I admire Mercury.

LESSONS IN GERMAN PRONUNCIATION.—No. X.

Die Roſe und die Lilie.

Dee ro′-zai öönt dee lee′-lee-ai.

Malvina ſtand mit ihrem Vater vor einer Lilie,
Mål-vee′-nå ſtånt mit ee′-rem fåh′-ter fore i′-ner lee′-lee-ai,
die unter einem Roſenſtrauch blühete. Blendend
dee öön′-ter i′-nem ro′-zen-ſtrouch blü′-hai-tai. Blen′-dent
weiß wie ein Lichtſtrahl erhob die ſchöne Blume
vice, vee ine licht′-ſtrâhl, err-hope′ dee shö′-nai bloo′-mai
ihren offnen duftenden Kelch. Ueber ihr hing eine
ee′-ren of′-nen döövf′-ten-den kelch. ü′-ber eer hink i′-nai
voll aufgeblühte kräftige Roſe, und warf einen röth-
foll ouf′-gai′-blü′-tai kref′-tig-ai ro′-zai, öönt vårf i′-nen rö′t′-
lichen Schimmer auf die zarten Silberblätter der
lich-chen shim′-mer ouf dee tsåhr′-ten zil″-ber-blet′-ter dair
Lilie, und ſo floß auch beider Blumenduft in ein-
lee′-lee-ai, öönt zo floss ouch bi′-der bloo′-men-dööft in ine-
ander.
ån′-der.

O, welch ein ſchöner Bund! rief Malvina, und
Oh, velch ine shö'-ner böönt! reef Mål-vee'-nå, öönt
neigte lächelnd ihr Haupt zu den Blumen hinab.
ni'ch'-tai lech'-chelnt eer houpt tsoo dain bloo'-men hin-åp'.

Es iſt der Bund der Unſchuld und Liebe! erwie-
Ess ist dair böönt dair öön'-shöölt öönt lee'-bai! err-vee'-
derte der Vater. So ſtanden ſie ſchweigend vor den
der-tai dair fåh'-ter. Zo ſtån'-den zee shwi'-ghent fore dain
Blumen.
bloo'-men.

Indeß trat Oskar in den Garten, Malvina's
In-dess' tråht Oss'-kår in dain går'-ten, Mål-vee'-nåhss
ſtiller Geliebter. Da floß ein röthlicher Hauch über
stil'-ler gai-leep'-ter. Dåh floss ine rö't-lich-cher houch ü'-ber
Malvina's Wangen, wie der Roſe Glanz über die
Mål-vee'-nåhss vång'-en, vee dair ro'-zai glånts ü'-ber dee
Lilie.
lee'-lee-ai.

Da ſah der Vater ſie an und ſprach: Nicht wahr,
Dåh zåh dair fåh'-ter zee ån öönt språhch: Nicht våhr,
Malvina, die Blumen haben eine Sprache und
Mål-vee'-nå, dee bloo'-men håh'-ben i'-nai språh'-chai öönt
ein Antlitz.
ine ånt'-lits?

Für die Unſchuld und Liebe! ſetzte Oskar hinzu.
Fü'r dee öön'-shöölt öönt lee'-bai! sets'-tai Oss'-kår hin-tsoo'.

VOCABULARY.

Lilie, *f.* lily	Bund, *m.* union, alliance
Strauch, *m.* bush	neigen, to incline
blenden, to blind, dazzle	hinab, down
Strahl, *m.* beam	Unſchuld, *f.* innocence
duften, to spread odour	Schuld, *f.* guilt, debt, fault
Kelch, *m.* cup, calix	ſchuldig, guilty, indebted
aufblühen, to blow, to open	indeß, in the meantime
kräftig, strong	Geliebte, *m.* & *f.* beloved, love
Kraft, *f.* strength	Hauch, *m.* breath
Schimmer, *m.* glimmer, faint light	Glanz, *m.* resplendence, splendour
Silber, *n.* silver	Sprache, *f.* language
Duft, *m.* odour	hinzuſetzen, to add
welch, –er, –es, which, what	ſetzen, to put

LESSONS IN GERMAN.—No. LXIII.

(2) Sein, to be.

	INDICATIVE.	SUBJUNCTIVE.	CONDITIONAL.	IMPERATIVE.	INFINITIVE.	PARTICIPLE.
	Present Tense.	*Present Tense.*		*Present Tense.*	*Present Tense.*	*Present.*
SING. 1	ich bin, I am.	ich ſei, I may be.		2. ſei du, be thou.	ſein, to be.	ſeiend, being.
SING. 2	du biſt, thou art.	du ſeieſt, thou mayst be.		3. ſei er, let him be.		
SING. 3	er iſt, he is.	er ſei, he may be.		1. ſeien wir, let us be.		
PLUR. 1	wir ſind, we are.	wir ſeien, we may be.		2. ſeid ihr be ye.		
PLUR. 2	ihr ſeid, you are.	ihr ſeiet, you may be.		3. ſeien ſie, let them be.		
PLUR. 3	ſie ſind, they are.	ſie ſeien, they may be.				
	Imperfect Tense.	*Imperfect Tense.*				
SING. 1	ich war, I was.	ich wäre, I might be.				
SING. 2	du war(e)ſt, thou wast.	du wäreſt, thou mightst be.				
SING. 3	er war, he was.	er wäre, he might be.				
PLUR. 1	wir waren, we were.	wir wären, we might be.				
PLUR. 2	ihr war(e)t, you were.	ihr wäret, you might be.				
PLUR. 3	ſie war(e)n, they were.	ſie wären, they might be.				
	Perfect Tense.	*Perfect Tense.*			*Perfect Tense.*	*Perfect.*
SING. 1	ich bin geweſen, I have been,	ich ſei geweſen, I may have			geweſen ſein, to have been.	geweſen, been
SING. 2	du biſt geweſen, &c.	du ſeieſt geweſen, been &c.				
SING. 3	er iſt geweſen,	er ſei geweſen,				
PLUR. 1	wir ſind geweſen,	wir ſeien geweſen,				
PLUR. 2	ihr ſeid geweſen,	ihr ſeiet geweſen,				
PLUR. 3	ſie ſind geweſen,	ſie ſeien geweſen,				
	Pluperfect Tense.	*Pluperfect Tense.*				
SING. 1	iſt war geweſen, I had been,	ich wäre geweſen, I might have				
SING. 2	du warſt geweſen, &c.	du wäreſt geweſen, been, &c.				
SING. 3	er war geweſen,	er wäre geweſen,				
PLUR. 1	wir waren geweſen,	wir wären geweſen,				
PLUR. 2	ihr waret geweſen.	ihr wäret geweſen,				
PLUR. 3	ſie waren geweſen.	ſie wären geweſen,				
	First Future Tense.	*First Future Tense.*	*First Future.*		*First Future.*	
SING. 1	ich werde ſein I shall be &c.	ich werde ſein, (if) I shall be,	ich würde }		ſein werden, to be about to be.	
SING. 2	du wirſt ſein,	du werdeſt ſein, &c.	du würdeſt }			
SING. 3	er wird ſein,	er werde ſein,	er würde } ſein,			
PLUR. 1	wir werden ſein,	wir werden ſein,	wir würden } I should be,			
PLUR. 2	ihr werdet ſein,	ihr werdet ſein,	ihr würdet } &c.			
PLUR. 3	ſie werden ſein,	ſie werden ſein,	ſie würden }			
	Second Future Tense.	*Second Future Tense.*	*Second Future.*			
SING. 1	ich werde }	ich werde }	ich würde }			
SING. 2	du wirſt }	du werdeſt }	du würdeſt }			
SING. 3	er wird }	er werde }	er würde }			
PLUR. 1	wir werden }	wir werden }	wir würden }			
PLUR. 2	ihr werdet }	ihr werdet }	ihr würdet }			
PLUR. 3	ſie werden } geweſen ſein, I shall have been, &c.	ſie werden } geweſen ſein, (if) I should have been, &c.	ſie würden } geweſen ſein, I should have been, &c.			

(3) Werden to become.

	INDICATIVE.		SUBJUNCTIVE.		CONDITIONAL.	IMPERATIVE.	INFINITIVE.	PARTICIPLE.
	Present Tense.		*Present Tense.*			*Present Tense.*	*Present Tense.*	*Present.*
SING. 1	ich werde,	I become.	ich werde,	I may		2. werde du, become thou.	werden, to become.	werdend, becoming.
SING. 2	du wirſt,	thou becomest.	du werdeſt,	thou mayst	become.	3. werde er, let him become.		
SING. 3	er wird,	he become.	er werde,	he may		1 werden wir, let us become		
PLUR. 1	wir werden,	we becomes.	wir werden,	we may		2. werdet ihr, become ye.		
PLUR. 2	ihr werdet,	you become	ihr werdet,	you may		3. werden ſie, let them become		
PLUR. 3	ſie werden,	they become.	ſie werden,	they may				
	Imperfect Tense.		*Imperfect Tense.*					
SING. 1	ich wurde,*	I became.	ich würde,	I might				
SING. 2	du wurdeſt,	thou becamest.	du würdeſt,	thou mightst	become.			
SING. 3	er wurde,	he became.	er würde,	he might				
PLUR. 1	wir wurden,	we became.	wir würden,	we might				
PLUR. 2	ihr wurdet,	you became.	ihr würdet,	you might				
PLUR. 3	ſie wurden,	they became.	ſie würden,	they might				
	Perfect Tense.		*Perfect Tense.*				*Perfect Tense.*	*Perfect.*
SING. 1	ich bin	I have	ich ſei	I may have become, &c.			geworden ſein, to have become.	geworden, become.
SING. 2	du biſt	thou hast	du ſeieſt					
SING. 3	er iſt	he has	er ſei					
PLUR. 1	wir ſind	we have	wir ſeien					
PLUR. 2	ihr ſeid	you have	ihr ſeiet					
PLUR. 3	ſie ſind	they have	ſie ſeien					
	geworden, become.		geworden,					
	Pluperfect Tense.		*Pluperfect Tense.*					
SING. 1	ich war	I had	ich wäre	I might have become, &c.				
SING. 2	du warſt	thou hadst	du wäreſt					
SING. 3	er war	he had	er wäre					
PLUR. 1	wir waren	we had	wir wären					
PLUR. 2	ihr waret	you had	ihr wäret					
PLUR. 3	ſie waren	they had	ſie wären					
	geworden, become.		geworden,					
	First Future Tense.		*First Future Tense.*		*First Future.*		*First Future.*	
SING. 1	ich werde	I shall	ich werde	(if) I shall become, &c.	ich würde		werden werden, to be about to become.	
SING. 2	du wirſt	thou wilt	du werdeſt		du würdeſt			
SING. 3	er wird	he will	er werde		er würde			
PLUR. 1	wir werden	we shall	wir werden		wir würden			
PLUR. 2	ihr werdet	you will	ihr werdet		ihr würdet			
PLUR. 3	ſie werden	they will	ſie werden		ſie würden			
	werden become.		werden,		werden, I should become, &c			
	Second Future Tense.		*Second Future Tense.*		*Second Future.*			
SING. 1	ich werde	I shall	ich werde	(if) I shall have become &c.	ich würde			
SING. 2	du wirſt	thou wilt	du werdeſt		du würdeſt			
SING. 3	er wird	he will	er werde		er würde			
PLUR. 1	wir werden	we shall	wir werden		wir würden			
PLUR. 2	ihr werdet	you will	ihr werdet		ihr würdet			
PLUR. 3	ſie werden	they will	ſie werden		ſie würden			
	geworden ſein, have become.		geworden ſein,		geworden ſein, I should have become, &c.			

* Or ward, Sect. 35.

FABLES.

LE BON MINISTRE.

Le puissant Aaron-Rashid commençait à soupçonner que son visir Giafar, ne méritait pas la confiance qu'il lui avait donnée [§ 134, (4.)] les femmes d'Aaron, les habitants de Bagdad, les courtisans, les derviches, censuraient le visir avec amertume. Le calife aimait Giafar; il ne voulut point le condamner sur les clameurs de la ville et de la cour [§141]. Il visita son empire; il vit partout la terre bien cultivée, la campagne riante, les hameaux opulents, les arts utiles en honneur, et la jeunesse dans la joie. Il visita ses places de guerre et ses ports de mer; il vit de nombreux vaisseaux qui menaçaient [§ 119.] les côtes de l'Afrique et de l'Asie; il vit (*voir*, 3. *ir.*) des guerriers disciplinés et contents. Ces guerriers, les matelots, et les peuples des campagnes s'écriaient: O Dieu! bénissez les fidèles en prolongeant les jours d'Aaron-Rashid et de son visir Giafar; ils maintiennent dans l'empire la paix, la justice, et l'abondance; tu manifestes, grand Dieu, ton amour pour les fidèles, en leur donnant un calife comme Aaron et un visir comme Giafar! Le calife, touché de ces acclamations, entre dans une mosquée, s'y précipite à genoux, et s'écrie: Grand Dieu! je te rends grâces: tu m'as donné un ministre dont mes courtisans me disent du mal, et dont mes peuples me disent du bien.—*Saint-Lambert.*

BONAPARTE ET LA SENTINELLE.*

Après avoir gagné la bataille d'Arcole, qui avait duré [§ 135, (6.)] trois jours, Bonaparte, toujours infatigable, parcourait son camp, sous un vêtement fort simple, qui ne décelait point en lui le général en chef, à l'effet d'examiner par lui-même si les fatigues de trois journées aussi pénibles que cette bataille, n'avaient rien fait perdre à ses soldats de leur discipline et de leur surveillance habituelles [§ 18, (3.)]. Le général trouve [§ 118, (5.)] une sentinelle endormie, lui enlève doucement son fusil sans l'éveiller, et fait faction à sa place. Quelques [S. 87.] moments après, le soldat se réveille; se voyant ainsi désarmé et reconnaissant son général, il s'écrie: Je suis perdu!—Rassure toi, lui dit Bonaparte avec douceur, après tant de fatigues, il peut être permis à un brave tel que toi de succomber au sommeil; mais une autre fois choisis mieux ton temps.

BIENFAISANCE.

Le duc de Montmorenci, qui fut décapité à Toulouse, aimait à répandre des bienfaits. Ce seigneur, voyageant [§ 49, (2.)] en Languedoc, aperçut dans un champ, quatre laboureurs qui dînaient à l'ombre d'un buisson. Approchons nous de ces bonnes gens, dit-il à ceux qui le suivaient, et demandons leur s'ils se croient heureux. Trois répondirent, que bornant leur félicité à certaines commodités

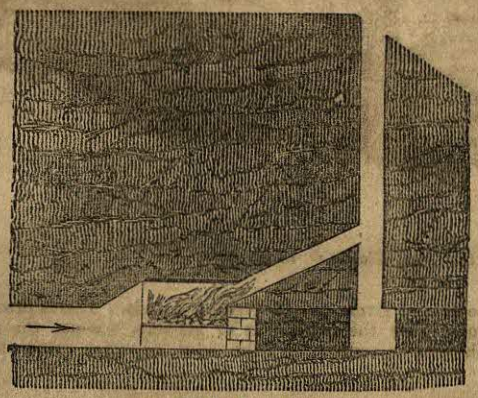
* The word *sentinelle* is always feminine.

de leur condition, que Dieu leur avait données, [S. 41. 7.] ils ne souhaitaient rien dans le monde. Le quatrième avoua franchement qu'une chose manquait à son bonheur: c'était de pouvoir acquérir certain héritage que ses pères possédaient.—Et si tu l'avais, [S. 61. 6.] cet héritage, dit M. de Montmorenci, serais-tu content?—Autant que je le [S. 45. 4, 5.] puis être, répondit le paysan.—Combien vaut-(*valoir*, 3. *ir.*) il? demanda le duc.—Deux mille francs, répondit le paysan.—Qu'on [S. 27.] les lui donne, reprit le duc, et qu'il soit dit que j'ai rendu un homme heureux en ma vie.—*Le Vassor.*

LESSONS IN MECHANICS.—No. XXVI.

MINING OPERATIONS (*continued.*)

STRUVE'S Mine Ventilator, by which from 20,000 to 100,000 cubic feet of air per minute may be supplied, is used in several of our collieries.



VENTILATION OF A MINE.

An illustration of the common ventilating apparatus by means of the furnace is given in the above engraving. It is a furnace placed near the bottom of the upcast shaft. The air, being considerably rarefied, is forced upwards with great velocity, and a descending current is caused to pass through the down shaft to supply its place. The principle of ventilation being thus established, it remains to apply it in the most efficacious manner.

The double headway course consists of two galleries parallel to each other, the one connected with the upcast side of the pit, and the other with the downcast. The shaft itself is divided into two divisions, by deals extending from top to bottom, and called the brattice walls. This division is air-tight, consequently the intercourse between the two currents of air is completely cut off.

According to the method usual in South Staffordshire, two shafts are sunk near together, about 7 to 7½ feet in diameter each, to the bottom of the coal, say about 200 yards' depth; the shafts commence at the same level, and terminate at the same level. One of these becomes the downcast pit, down which the air descends; the other is the upcast pit, up which the air ascends.

Various improvements have been made in the methods employed in the ventilation of mines, and it is a subject which deserves a large share of the attention of scientific men.

The Ventilation Fan is one of these methods, by which a free current of air is supplied to the mines. The speed at which the ventilation fan is usually worked is 60 revolutions per minute, giving a velocity at the circumference of the fan of 2,545 feet per minute; 45,000 cubic feet of air per minute are thus drawn through the mine, nearly one-third of which ventilates the upper workings, and the rest passes through the lower workings. Too much importance cannot be attached to proper ventilation. It is the best, cheapest, safest form of security which can be adopted. For want of proper ventilation—a full current of air freely circulating through the workings—thousands of lives have been sacrificed.

ATMOSPHERIC RAILWAY.

The application of the pneumatic principle to purposes of locomotion has been the subject of investigation and experiment; and, although no very important practical results have as yet been obtained, the feasibility of the plan proposed has been established. The pressure of the air is well known to exercise a very powerful influence on whatever it is brought in contact with. The principles of pneumatics are set forth at large in an article on Natural Philosophy, and it is therefore unnecessary to dwell upon them at any length in this brief paper. It will be clear to our readers, supposing a tube of any dimensions, or of any extent, be submitted to the action of the air pump, and the whole of the air within the tube pumped out, a piston of the exact dimensions of the tube being then introduced, and the action of the air brought to bear upon it from behind, that the piston will be propelled forward with a velocity corresponding to the pressure of the air.

The principle of the atmospheric railway is then very simple and apparently easy of application; the piston has, of course, to be connected with the railway carriages, and all that is then required is a tube perfectly air-tight, and air pumps of sufficient power to exhaust the air in the tube through which the piston is propelled. The interior of the tube is usually covered with a thick coating of tallow, and the piston is made red hot.

The first experiments on a large scale were tried on a portion of the West London Railway, at Wormwood Scrubs. A series of cast-iron pipes, nine inches in diameter, and half a mile in length, were laid down, and although the pipes and the rails were not in good order, yet on a gradient of 1 in 115, and with a surplus pressure on the piston of nine pounds to the square inch, a load of goods, weighing several tons, was propelled at the rate of twenty miles an hour.

A parliamentary grant was subsequently made for the carrying out of the atmospheric principle, but no great success attended the experiments.

The latest application of the pneumatic principle is that of the pneumatic dispatch tube. By means of this tube, parcels are conveyed with immense rapidity and security. There seems no reason to doubt the utility of the atmospheric principle. That it has for the present failed in any extensive effort is no ground of argument that it must fail altogether. When steam locomotion was first introduced, it was only intended for the conveyance of luggage; and when passenger trains were proposed, the scientific world denounced the idea as utterly preposterous. But the principle of steam locomotion was an immense success. It is not, therefore, unreasonable to suppose that much may yet be done on the atmospheric principle. The pneumatic dispatch tube is the first step towards it.

LESSONS IN GEOLOGY.—No. XXXIX.

By THOMAS W. JENKYN, D.D., F.R.G.S., F.G.S., &c.

CHAPTER III.

ON THE INFLUENCE OF ATMOSPHERIC AGENTS ON THE EARTH'S CRUST.

SECTION VII.—ON GLACIERS.

§ ii. ON THE MOTION AND ACTION OF GLACIERS.

THOUGH a glacier is a solid, vast, and ponderous mass, closely packed between the rocks of a mountain glen, it is not a body that is stationary like a frozen lake of perpetual ice. Its entire mass is in motion, and always in motion. The motion of an hour or a day is infinitesimally small, but it is never stopped. A glacier is every moment changing. Its lower terminations are ever dissolving and disappearing, and its upper portions are ever renewing, and ever replenishing the parts that have melted away at its lower end.

The problem of the motion of a glacier has been found almost as difficult as the ancient philosopher found the problem of motion itself. Some have conjectured that the movement of such a massive body is due to the expansion of water frozen in the crevices of the glacier, an action which impels the portions on the lower slopes of the valley to move farther downwards. The most probable solution is, that the motion is the result of the softened state of the lower surface of the ice which rests upon the inclined bed of a rock, for the temperature of the solid rock on which the glacier rests is always higher than that of ice.

It is beyond all dispute that the lower extremities of the glaciers are constantly dissolving and perishing, partly through the heat of the sun in summer, and partly by the influence of particular winds, both actions being aided by the temperature of the underlying rock. Whether their motion be produced by expansion, or by their own gravity on an inclined plane, it is certain that the rapidity of their progress downward is much regulated by the amount of declivity in their respective valleys.

Their motion is slow but unremitting. In one case, the motion was observed and calculated, and was found to have been 4,400 feet, or more than three-quarters of a mile, in nine

years. It used to be thought that glaciers never moved in winter, but the observation of Professor James Forbes and his friends—observations continued for the whole year have demonstrated that they are in perpetual motion, summer and winter.

The careful investigations of scientific men, especially of Professor J. Forbes, have shown that the motion of a glacier is much like that of any semi-liquid mass, or what is called a viscous body, something like treacle, or say thick mud, or an enormous mass of fresh mortar, situated on the slope of a hill and put into motion in some slanting trough, within which it moves by its own gravity. In the case of the fresh mortar or the thick mud the motion is greatest in the centre, according to the laws of rivers and all flowing liquids. This is precisely the case with the movement of glaciers, because the parts which come in contact with the sides, or which grind against the rugged bottom, have to contend with resistance from the lateral and surface rocks.

The increase of movement in the middle course of the glaciers accounts for the curved lines which are frequently in

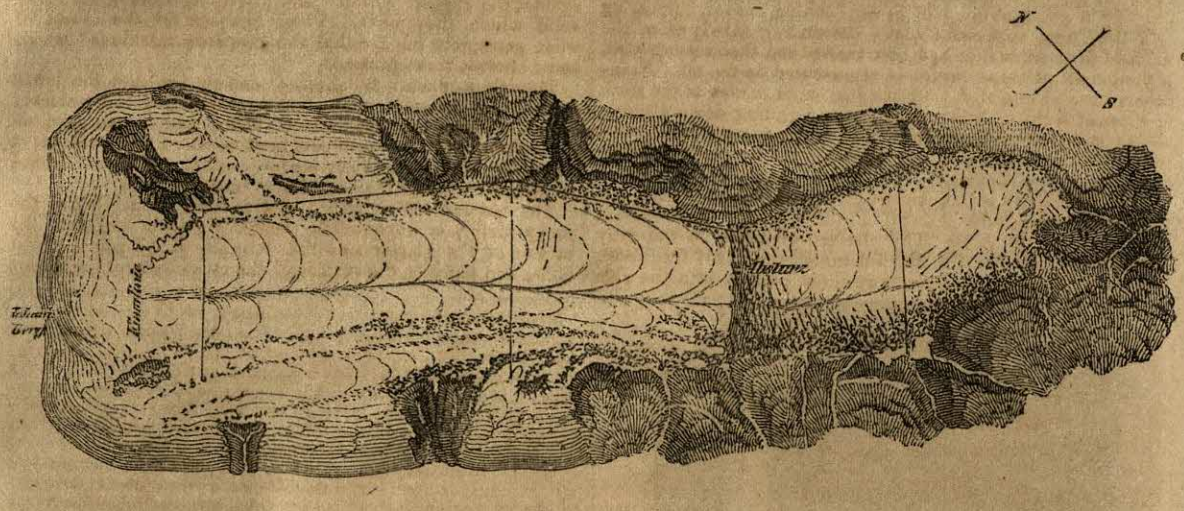


Fig. 86.—*Sets of Curves in the Glacier of the Great Glockener, in the Alps.*

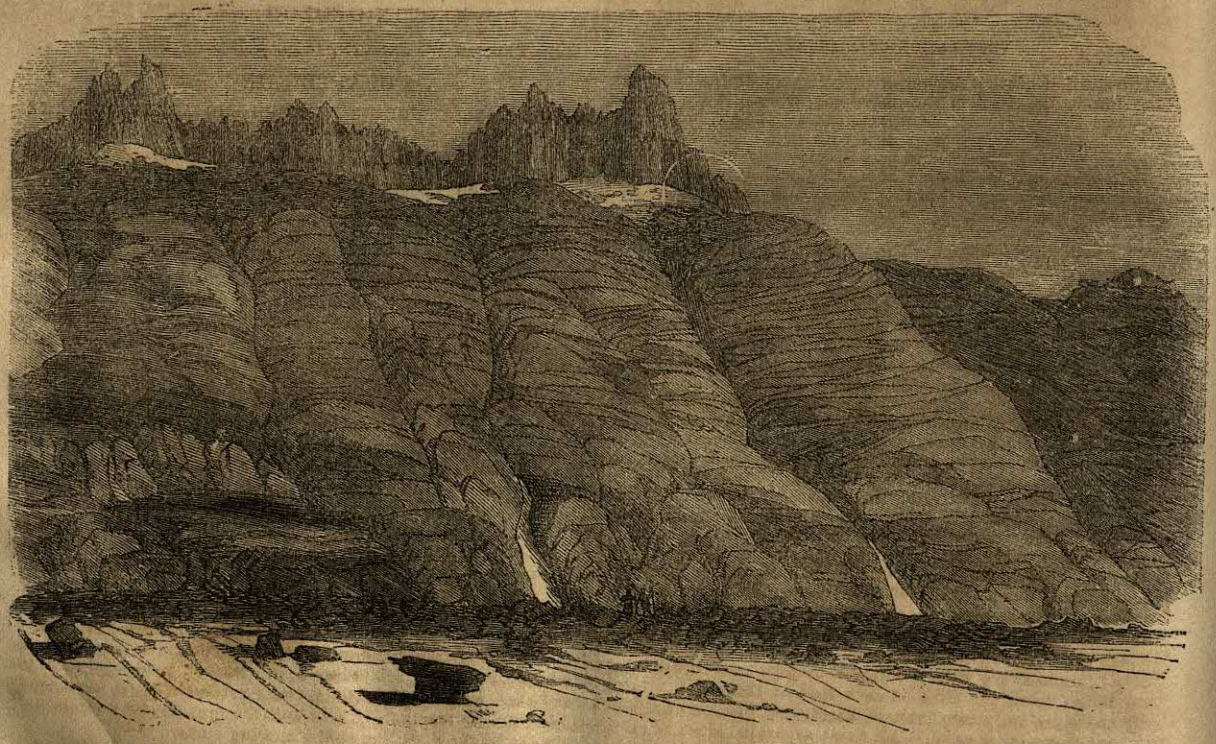


Fig. 87.—*Cliff of Rock rounded and striated by Glaciers in the Unter Aar Valley, in the Alps.*

their surface, with their convexity towards the lower parts of the valley. These curved lines are best seen when the observer, during the subdued light of evening, looks down upon the glacier from some height. In such a position he will discover a great number of brown-looking curves, appearing as if they were successive waves descending slowly from the fields of firny snow that had been melted and then recongealed. A double set of these curves is represented in fig. 86. Naturalists have shown that they are just such curves as the froth or scum of a thick fluid would form in gliding down a gentle slope; and that the downward swell of the curve is occasioned by the greater rapidity of the glacier in the centre than at the sides.

In general there is but one set of curves in each glacier, but there is a remarkable exception in the glacier of the Great Glockener, in the Alps. The glacier originates in the firny snow on the east flank of the Johannisberg, 12,157 feet above the level of the sea. This firny snow presses into the glen of this, the curved lines show the two separate motions of the glacier.

The constant and irresistible pressure of such a ponderous mass in motion must occasion certain rubbings and chafings against the rugged bottoms and projecting sides of the rocks amid which they move. These chafings are the causes of what geologists have called the "surface markings" which some ancient rocks present.

Though a glacier consists of smooth ice, yet the lower surface and the sides of it are generally found to be thickly set with stones and fragments of rocks, and coarse sand, all firmly frozen into one compact hard mass. The movement of a glacier containing such coarse, angular, and pointed, hard stones, must give it the action of an immense rasp.

The rasping action of the glacier is two-fold. When the rocky materials impacted in the ice are small and fine, the motion of the glacier smooths away the rough points of the cliffs, and polishes the surface of the rocks both on the bottom

Fig. 88.—*The Union of Two Glaciers in the Octsch Valley with Lateral and Medial Moraines.*

from the northern and southern parts of this eastern flank of the mountain. The two streams of firn meet at the bottom of the valley, and the glacier formed by them moves in two courses, each having a motion of its own. This is illustrated by fig. 86.

In this engraving you see, on each side of the glacier, several distinct longitudinal lines of what are called moraines. These moraines are ridges formed by heaps of stones which have fallen from the cliffs on each side of the valley. Generally there are only two lines of fragments, one on each side; but here there are several. All these separate ridges of stones are carried down in several lines till they come to a precipice, represented by the line above *x*. After descending headlong to a lower valley between *x* and *y*, they form but two moraines, one on each side, and with one set of curves. What is most remarkable in the upper part of this glacier is, that the line in the centre, between the two curves, is not a moraine of rocky fragments, but a moraine of firny snow. On each side and at the sides. But, when the coarse and pointed fragments of rock project a little out of the lower surface or at the sides of the glacier, the pressure of such an enormous weight in motion, scratches the solid rocks, and makes grooves, or what are called striæ, in their surface.

Rocks that have been thus affected by glaciers are called, according to their respective appearances, smoothed or polished rocks, and striated or scratched rocks. These striæ or scratches, wherever found, are always in parallel lines, because the angular and pointed materials that produced them were firmly fixed in the rasping glacier; and the grooves or scratches are always in the direction of the moving mass.

Some rocks exhibit a remarkable variety in the direction and the parallelisms of these striæ or grooves. As a glacier is known to rise and sink in thickness at different seasons, and to have different sets of movement in different circumstances, a new set of scratches corresponding with such movement will be produced, scratches which sometimes cross, at a small

angle, those which had been previously made. Fig. 87 shows how the surface of a cliff of rocks along which glaciers have passed, has been rubbed, rounded, smoothed and polished by ice and fine sand; or scratched and indented, as if by the edges and points of hard angular stones, forcibly urged along by the enormous pressure of the gliding glacier, and acting on the rock like diamonds upon glass.

The rocks in the higher districts of the Valley of the Aar exhibit the appearances of rounding, grooving, and smoothing of the sides up to a certain height. It is evident that up to the highest lines of these smoothings and markings, the upper surface of a glacier must, at one time, have reached. In looking at the face of this section, you must remember that the pointed, columnar, and needle-shaped rocks at the top of the engraving, and the rounded and scratched rocks in the foreground, are precisely the same rock, as to lithological character and formation; that the only difference between them is in their external appearance, and not at all in their internal structure—and that, consequently, such an external difference could have been produced only by an external agency, which is the agency of glaciers.

It will serve you, in your future inquiries, to keep in mind the fact that some large masses and huge blocks of such striated and scratched cliffs may, in their turn, be disintegrated, either by frost or by glacier pressure, and be removed and carried downward, and be deposited far from thier parent bed, but bearing upon one or more of its sides all the scratchings and groovings or polishings which it had received from its contact with glaciers. This will prepare you to understand what will be said, in a future lesson, on drifted boulders with surface markings.

Some of the most important phenomena developed by the motion and action of glaciers, is the formation and deposition of moraines, which have been already described as ridges of stone brought down on the surface of glaciers.

The stony fragments and coarse gravel which compose the ridges called moraines are always derived from the high rocks or cliffs in the immediate neighbourhood of the glacier. These masses are loosened from their parent rocks by atmospheric agents. During the heat of summer days, the snow which lies in dents and cliffs of the rock, is melted by the sun; and, as water, it finds its way into the smaller cracks and crevices of the cliffs. When this water is frozen, the icy wedge between the masses of rock expands, and by increasing in bulk, splits the surface rock into fragments. The rocky pieces that are thus loosened and shattered fall, from the tops of precipices and the sides of cliffs, down to the surface of the solid ice. A very large quantity of such detritus is brought down to the glaciers by the fall of avalanches, and by the rush of torrents formed by melted snow. Besides these agents of disintegration, the glaciers themselves, by their great pressure, break off large masses and blocks from the sides of the valleys in which they move, and then remove them to a lower level, where they deposit them.

Moraines are divided into three classes.

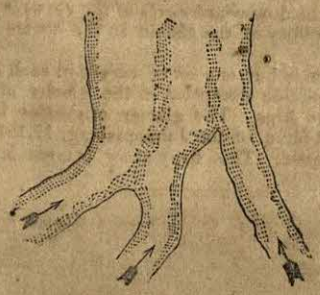
1. The lateral or side moraines. These consist of longitudinal ridges of stone, stretching sometimes along the entire length of the glacier, and resting on each side or shore of the glacier, immediately under the walls of each cliff. They are consequently a double ridge of stones, of all sizes, formed on what may be called each bank of the glacier.

2. Medial moraines. Where two glacier glens meet in a lower valley, the two glaciers of both glens will, as in the meeting of two streams, form one glacier. The consequence of such a junction is that the moraine ridge on the left side of one valley, and the moraine ridge on the right side of the other valley will, in their downward movement, crowd together and form one ridge in the middle of the lower valley. This larger ridge, formed by the other two, constitutes in the further course of the glacier, the middle or medial moraine. The middle ridge marks for many miles the actual separation of the two ice streams, though they glide in a common valley. Sometimes three or more glens descend into one wider valley, and then there will be two or more medial moraines as represented in fig. 89.

3. Terminal moraines. You have seen that the glacier at its lowest extremity melts away and vanishes, and that, consequently, all the ridges of stones which it bore downwards at its sides and in its centre must fall and be deposited near where the lower part of the glacier ends. The mass of stones and blocks which are thus deposited form terminal moraines.

As there is a daily waste of the ice at its lower extremity and a daily renewal of the glacier front, there must of necessity be a daily addition of stones deposited in proportion to the amount of that waste and renewal. When the glaciers advance

Fig. 89.



The formation of Medial Moraines, when two or more Valleys unite.

far down among plots of uncultivated land, and melt away in those positions, they leave behind them immense quantities and large heaps of stones and debris, which convert vineyards and orchards into a scene of rocky desolation.

The ridges of stone and gravel that form the lateral and the medial moraines are sometimes very high, reaching even thirty or forty feet in elevation. Some of the stones in these moraines are mere rough pebbles, but others are huge blocks as large as a small cottage. When the terminal moraine is examined, it is found utterly destitute of every appearance of stratification. The terminal mounds consist of a confused mass of fragments of all sizes; for the glacier transports everything, the largest blocks and the finest gravel, mingles them altogether, and then leaves them in one confused heap wherever it is melted away.

The sands that are found in a moraine are formed by the action of the moving glacier in chafing, grinding and crushing against the bottoms and sides of rocks, and wearing them down into gravel, sand, and mud. The same process accounts for the facts, that many of the larger and the harder fragments found in the glacier have their angular points worn and rounded.

Imagine that glaciers are sometimes, as has already been represented, deeper or thicker than at other times. In these cases their surface rises to higher levels, and reaches the loftier flanks or ledges of the mountains on each side of them. It is obvious that when the surface of such a glacier melts away into a lower level, the lateral moraines which it bore in its higher state, must be left behind to remain on the higher flanks or ledges to which it had risen on each side of the mountain. When the upper surface of a glacier rises, like what takes place in a swollen torrent at particular seasons, the moraines resting on it must, of course, be correspondingly lifted up. When the increase of temperature at any season reduces the bulk and depth of the ice, the blocks and gravel which the glaciers bore in their higher level are left at a considerable height above its surface in a reduced state.

This fact in the physical geography of glacier mountains is of great importance when applied to geological phenomena. The account which you have had in this lesson of the surface markings on the rocks in the Unter Aar, and represented by fig. 87. shows that at some earlier period in the history of the Alps, the Swiss glaciers rose much higher and reached much farther than they do now. The scratches which are found upon very high cliffs, and the blocks and rocky fragments which are seen resting on the flanks of high mountains, beyond the reach of all the present glaciers, prove, that at a former geological period, the whole of the lower valleys of Switzerland now lying between the High Alps and the mountains of the Jura, were covered with high and vast glaciers which came down from the principal valleys of the Rhone and the Aar. Of

these immense glaciers, the present are only small remnants, —small compared with their gigantic ancestors, though still of sufficient magnitude to demand the attention of the noblest intellects.

Glaciers, though dangerous and often fatal to the traveller, and barren and destructive to the farmer, are sources of the greatest blessings to our earth. In their dread solitudes they are mysterious productions of the Creator, but in their results they are clear and extensive demonstrations of his infinite wisdom and bountiful goodness. Were it not for these glaciers and the treasures of perpetual snow, many rivers and streams would become completely dry, and the meadows and cornfields of rich valleys and fertile plains would become an arid wilderness. God commands his sun to rise upon the eternal snow and to melt the crystal glacier, and makes them to contribute of their hidden stores, drops and rills and streams and torrents, to form rivers that shall spread fertility, beauty, and wealth over fields and meadows.

LESSONS IN ENGLISH.—No. LXII.

By John R. Beard, D.D.

Verbs;—*Review*; *Verb-Parsing.*

The three root-forms of the English verb may pass into a great variety of forms as appears from the following combinations of the verb *to teach*.

With the Infinitive Mood.

I do teach, I shall teach, I will teach, I may teach, I can teach, I must teach, let me teach.

With the Participle Present.

I am teaching, I shall be teaching, I will be teaching, I may be teaching, I can be teaching, I must be teaching, let me be teaching.

I have been teaching, I shall have been teaching, I will have been teaching, I may have been teaching, I can have been teaching, I must have been teaching, let me have been teaching.

With the Participle Past.

I am taught, I shall be taught, I will be taught, I may be taught, I can be taught, I must be taught, let me be taught.

I have taught, I shall have taught, I will have taught, I may have taught, I can have taught, I must have taught, let me have taught.

I have been taught, I shall have been taught, I may have been taught, I might have been taught, I can have been taught, I must have been taught, let me have been taught.

Mark that when two or more of what are called auxiliary verbs are combined with a participle, usually the first expresses the manner and the second the time; the first only admits of variation in itself (inflexion), as, *I might have loved, thou mightst have loved.*

The forms just given have to be multiplied first by the persons—three singular, three plural; secondly, by the tenses—present and past; thirdly, by *if* and other conjunctions giving rise to the dependent and the elliptical constructions. Then there are the affirmative, the negative, and the interrogative forms; as well as the interrogative negative. Besides this there is the uncontracted and the contracted form, as well as the solemn or the scriptural form; e. g.

Forms multiplied by the Persons.

I am teaching, thou art teaching, he is teaching, we are teaching, you are teaching, they are teaching.

Forms multiplied by the Tenses.

I teach, I taught, I was teaching.

Forms multiplied by if, &c.

If I teach, if I taught, if I am teaching, if I was teaching, &c.

Affirmative, negative, interrogative and interrogative-negative forms.

I teach; I do not teach; do I teach? do I not teach? &c.

Contracted and uncontracted forms.

They don't teach, they do not teach; I don't teach, I do not teach.

Scriptural forms.

He teacheth, he loveth, he instructeth, he guideth.

A few facts respecting the verb remain to be set forth.

The most general division of verbs is that which exhibits them as *personal* and *impersonal.*

Personal verbs are such as take the ordinary persons *I, thou, he,* &c. *Impersonal* verbs take only the third person of the neuter gender, namely *it*; e. g., *it rains, it snows, it hails, it thunders.* It has been proposed to call these verbs *uni*personal (having one person) on the ground that *im*personal signifies that which has no person. I do not know that the proposed change is worth adopting. Strictly speaking it is not a person, inasmuch as a thing is not a person. It is more important to remark that in these impersonal verbs the action of the verb is represented in the most abstract form of which it is possible next to the infinitive. Thus the noun *snow* passes into an indefinite verbal shape in *to snow*, and *to snow* becomes a little less indefinite in the form of *it snows.* Impersonal verbs mostly refer to atmospheric changes, and are used less extensively in English than in most other languages.

Verbs may be divided into *primitive* and *derivative.* The *primitive* are intransitive, the *derivative* are transitive. The change is effected for the most part by operating on the vowel; e. g.

Primitive.	*Derivative.*
Rise	raise
Lie	lay
Sit	set
Fall	fell
Drink	drench

I have already given instances of verbs derived from nouns by a change in the accent or pronunciation. Another class of verbs is formed from nouns by hardening the final consonant; e. g.

Nouns.	*Verbs.*	*Nouns.*	*Verbs.*
Abuse	abuse (abuze)	Grease	grease
Advice	adv'ise	House	hou'se
Close	clo'se	Mouse	mou'se
Device	de'vise	Prophecy	pro'phesy
Diffuse	diff'use	Rise	rise (rize)
Excuse	excu'se	Use	us'e

Some verbs are termed *defective*; they are such as want some of the parts ordinarily ascribed to verbs. *Beware* is a defective verb, being used only in the imperative or to give a caution. *Quoth* is a defective verb, and is employed in no other than the third person singular. *Begone* may be accounted another defective verb like *beware. Begone* is a compound, made up of *be* and *gone*, that is *get away*; and *beware* is composed of *be* and *ware* found in *aware*, and *wary.*

Specimen of Verbal Parsing.

I love, I do love, I do not love, do I love? I loved; I shall love, I will love, I may love, let me love; I am loving, I shall be loving, I may be loving; I am loved, I have loved, I shall have loved, I have been loved, if I love; if he love; to love, love thou.

I love, N.B. I omit the pronouns, as there is no need of the repetitions which reference to them would involve. *I love* is a transitive verb of the independent construction (the indicative mood) present tense, first person singular, and is used affirmatively.

I do love, do is a modal verb, of the independent construction, affirmative, first person singular, governing *love* in the indefinite form (the infinitive mood) *love* is a transitive verb in the indefinite form dependent on *do*; the two verbs united form the emphatic present; the emphatic past is *I did love.*

I do not love, is the negative form of the last proposition.

Do I love, is the interrogative form of the same sentence.

I loved, the past tense of the verb *to love.*

I shall love, shall is a qualifying verb here used to denote futurity, and governing *love* in the infinitive mood.

I will love, will is a qualifying verb here used to denote a design or intention, and governing *love* in the indefinite form.

I may love, may is a qualifying or modal verb, it qualifies *love*, and it governs *love* in the indefinite form, commonly called "the infinitive mood."

Let me love, let is a transitive verb having *me* for its object and having the infinitive *love* depending on it.

I am loving, is the continued present formed by *am*, the present tense first person singular of the verb *to be*, and the present participle *loving.*

I shall be loving, a compound form having a continued sense, and made up of the qualifying verb *shall*, the infinitive *be*, and the present participle *loving*.

I may be loving, a compound continued form, consisting of the modal verb *may*, the indefinite *be*, and the participle *loving*.

I am loved, a compound form, of the present time made up of *am* and the past participle *loved*, with a reflective action on the subject, or forming what is called "the passive voice."

I have loved, a compound form of past signification with a continuance down to the present, consisting of *have*, the present tense of *to have*, and the past participle *loved*.

I shall have loved, *shall* (as before explained) *have* an infinitive dependent on *shall*, combined with the past participle *loved*; the form denotes an action which will have taken place previously to another action yet unperformed.

I have been loved, a reflex (or passive form) made up of the verb *have* and the participles *been* and *loved*; the form is affirmative and independent, and denotes an act which recently took place.

If I love, a dependent form from *I love*.

If he love, an elliptical form from *he loves*.

To love, the indefinite form of the verb *love*, commonly called "the infinitive mood.

Love thou, the imperative of the transitive verb *love*, the second person singular, affirmative, the negative being *do not thou love*, or *love not*.

THE PARTICIPLE.

Participles can scarcely be considered a separate form of speech. A participle (Latin pars *a part* and capio *I take*) is so called because it partakes of the qualities of a verb and an adjective. It would be more correct to say that participles may be used as adjectives, and that sometimes, wholly losing their verbal force, they become adjectives.

We have seen that the English verb, when reduced to its simplest form, consists of three parts; e. g. *talk*, *talking*, *talked*.

Talking is called a present participle; it is emphatically present. "I talk" describes a general habit rather than an act now taking place; *I am talking*, is evidently a continued act and in regard to time may be spoken of as *a continued present*.

It is the termination *ing* that makes talking present.

A transitive participle may be used intransitively; e. g.

The house is building.

This use of the present participle seems to have been derived from the old idiom which prefixes the preposition *a* to the present participle, which then probably performs the function of a noun; e. g.

"The house is *a* building."

In this particular instance, however, the words "a building" would be liable to be taken as an article and a noun, equivalent in sense to "an edifice."

The present participle has the force of the Latin gerund; e. g.

In building the house they used stone.

The present participle may stand as an infinitive; e. g.

Buying a house is better than building one, that is, *to buy* is better than to build.

How readily in English acts run into results, and actives become passives, you may see by comparing *building* taken as an active participle with *building* taken as an edifice.

Applications of the participle ending in ING.

Transitive.	"He is building a house."
Intransitive.	"The house is building."
Gerund.	"In building the house bricks were used."
Infinitive.	"Building is a costly pleasure."
Result.	"The building is very fine."
Adjective.	"A talking bird is rare."

The other participle, namely that ending in *ed* (abbreviated into *d* and *t*, as build*ed*, built) seems to have for its essence the idea of past time.

A word which denotes what is past, may easily be made to denote the past effect of an action sometime present. We may see this fact illustrated in the verb, to *think*. The result of thinking is thought, and so thought is at once the past tense, the past participle and a noun; e. g.

Pres.	*Past.*	*Past part.*	*Noun.*
I think	I thought	thought	thought

The past participle is sometimes termed "the passive participle." Hence it appears that this participle may signify either simply a past act, or a result, and that as denoting a result, it at least approaches a passive signification. Hence the ambiguity which exists in what grammarians term "the passive voice present tense;" e. g.

The house is built.
The boy is loved.

When we say "the boy is loved" we signify a present fact; but when we say "the house is built," we mean, that the house stands there complete.

When a process is meant it is better to say,

The house is building.

or to employ the active form, as,

I am reading the volume.

some, however, prefer,

The house is being built.

But this form has no sufficient authority. Besides there is an evident absurdity in speaking of a thing as at the same moment past and present, e. g. being built.

LESSONS IN GEOMETRY.—No. XXII.

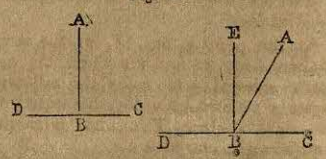
LECTURES ON EUCLID.

PROPOSITION XIII.—THEOREM.

The angles which one straight line makes with another upon one side of it, are either two right angles, or are together equal to two right angles.

Let the straight line A B, fig. 13, make with D C, upon one side of it, the two angles C B A and A B D. These angles are either two right angles, or are together equal to two right angles.

Fig. 13.



For, if the angle C B A, be equal to the angle A B D, then each of them is a right angle, by Def. 10. But, if the angle C B A be not equal to the angle A B D, from the point B, draw the straight line B E at right angles to the straight line C D, by Prop. XI. Then, because the two angles A B C and A B D occupy the same space about the point B, and on the same side of C D, as the two angles E B C and E B D, therefore, by Axiom 8, the two angles A B C and A B D are equal to the two angles E B C and E B D. But the two angles E B C and E B D are, by construction, two right angles; therefore, the two angles A B C and A B D are equal to two right angles. Wherefore, the angles which one straight line makes with another, &c. Q. E. D.

Scholium.—The demonstration of this proposition, as given by Euclid himself, is unnecessarily complex, and to some even difficult; but, after all, it amounts to the same thing, as we have stated in the preceding demonstration. For the equality of the two angles A B C and A B D, to the two angles E B C and E B D, is inferred from the equality of each pair to the three angles A B C, A B E, and E B D. Now these three angles are simply the angles which occupy the whole space about the point B, on the same side of C D.

Corollary 1.—All the angles made by any number of straight lines meeting at a point on one side of a straight line are together equal to two right angles. This is simply the fact, for the same reason as given in the demonstration, that they occupy the same space, and are therefore equal by Axiom 8.

Corollary 2.—All the angles made by any number of straight lines meeting in a point, are together equal to four right angles. Because if a straight line be drawn through the point, it is evident by the preceding corollary that all the angles made by any number of straight lines meeting in a point on the one side of that straight line, are equal to two right angles; and all the angles made by any number of straight lines meeting in the same point on the other side of that straight line, are also equal to two right angles; therefore all the angles made by any number of straight lines meeting in the same point on both sides of that straight line are equal to four right angles.

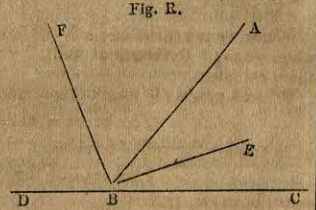
Definition 1.—When two angles are together equal to two right angles, the one is called the *supplement* of the other.

Definition 2.—When two angles are together equal to a right angle, the one is called the *complement* of the other.

EXERCISE TO PROPOSITION XIII.

If an angle and its supplement be bisected, the bisecting lines are perpendicular to each other.

Fig. R.



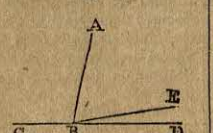
In fig. (R), let ABC and ABD be supplementary angles; if the angle ABC be bisected by the straight line BE, and the angle ABD by the straight line BF; then the angle EBF is a right angle. For, the angle ABE is the half of the angle ABC; and the angle ABF is the half of the angle ABD; therefore the whole angle EBF is half of the two angles ABC and ABD; but these two angles are, by Prop. XIII., equal to two right angles; therefore, the angle EBF is one right angle. Wherefore, if an angle and its supplement, &c. Q. E. D.

Scholium.—This demonstration virtually requires a new axiom, namely, that if two things be the halves of two other things, the sum of the former two is half the sum of the latter two. This axiom might, of course, be demonstrated by means of those already given, and so might the proposition; but this exercise we leave to the mathematical student himself, who by this time should be able to meet the case required, and in the proper manner.*

PROPOSITION XIV.—THEOREM.

If, at a point in a straight line, two other straight lines, upon the opposite sides of it, make the two adjacent angles together equal to two right angles, these two straight lines are in one and the same straight line.

Fig. 14.



At the point B, fig. 14, in the straight line AB, let the two straight lines BC and BD upon the opposite sides of AB, make the adjacent angles ABC and ABD together equal to two right angles. Then, BD is in the same straight line with CB.

For, if BD be not in the same straight line with CB, let BE be in the same straight line with it. Then, because the straight line AB makes with the straight line CBE, upon one side of it, the two angles ABC and ABE, these two angles are together equal, by Prop. XIII., to two right angles. But the two angles ABC and ABD are likewise together equal to two right angles by hypothesis. Therefore the two angles CBA and ABE are equal, by Axiom I., to the two angles CBA and ABD. From each of these equals, take away the common angle ABC, and the remaining angle ABE is equal, by Axiom III., to the remaining angle ABD, that is, the less to the greater, which is impossible. Wherefore, BE is not in the same straight line with BC. In like manner, it may be shown that no other straight line but BD can be in the same straight line with BC. Therefore BD is in the same straight line with CB. Wherefore, if at a point, &c. Q. E. D.

Corollary.—If at a point in a straight line, two other straight lines upon the same side of it, make each a right angle with it, these two straight lines shall coincide with each other.

For, suppose that at the point B, fig. 14, the two straight lines BE and BD on the same side of it, make the angles ABE and ABD, each a right angle, then BE must coincide with BD. Produce DB to C; then, by Prop. XIII., the angles ABD and ABC are equal to two right angles; but, by hypothesis, ABD is a right angle; therefore ABC is also a right angle. But, by hypothesis, ABE is also a right angle; wherefore at the point B, in the straight line AB, the two straight lines BC and BE make the adjacent angles equal to two right angles; therefore the straight lines BC and BE are in one and the same straight line; but the straight lines BC and BD are also in one and the same straight line. Wherefore the straight lines BE and BD have a common segment BC, but this is impossible, by the corollary to Prop. XI. Therefore, the straight line BE must coincide with the straight line BD. Wherefore, if at a point, &c. Q. E. D.

Scholium.—Euclid has not thought it necessary to add this corollary to the text; but he takes it for granted in the demonstration of several of his subsequent propositions. The want of any reference to such a corollary as this, in these propositions, has always created a hiatus, or halt in the steps of reasoning, in the mind of the acute student. This want is particularly felt in the demonstration of Prop. XI., Book II., where it is taken for granted by Euclid, that when the square AG is described upon the straight line AF, its side AH must necessarily coincide with the given straight line AB, and thus determine the point of section H. Dr. Thomson appears to have felt this defect in Euclid's demonstration of this proposition, and accordingly he has made a change in his construction of it, which removes the hiatus, and renders any reference to such a corollary as the preceding unnecessary in his demonstration of it. Dr. Thomson has silently made this change in Prop. XI., Book II.; hence it is probable that many persons who have read both Simson's edition and his, have never noticed the difference. Nevertheless, it is one to which we attach great importance, not so much on account of the said proposition, as of others which we intend to bring under review in future lessons.

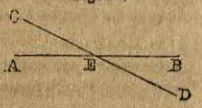
PROPOSITION XV.—THEOREM.

If two straight lines cut one another, the vertical, or opposite, angles are equal.

Let the two straight lines AB, and CD, cut one another in the point E. The angle AEC is equal to the angle DEB, and the angle CEB to the angle AED.

Because the straight line AE makes with CD the two angles CEA and AED; these angles are together equal (I. 13) to two right angles. Again, because the straight line DE makes with AB the two angles AED and DEB, these angles are together equal (I. 13) to two right angles. But the two angles CEA and AED, have been proved to be equal to two right angles. Therefore the two angles CEA, and AED, are equal (*Ax.* 1) to the two angles AED and DEB. From these equals, take away the common angle AED. Therefore the remaining angle CEA is equal (*Ax.* 3) to the remaining angle DEB. In the same manner, it can be demonstrated, that the angle CEB is equal to the angle AED. Therefore, if two straight lines, &c. Q. E. D.

Fig. 15.



Corollary.—Two angles are equal if their supplements be equal; and if the supplements of two angles be equal, the angles are equal.

Scholium.—The corollaries usually added to this proposition by Euclid, are included in those now added to Prop. XIII.

EXERCISE I. TO PROPOSITION XV.

If at a point in a straight line, two other straight lines meet upon the opposite sides of it, and make the vertical or opposite angles equal, these two straight lines are in one and the same straight line.

At the point E, fig. 15, in the straight line AB, let the two straight lines CE and DE meet at the point E, upon opposite sides of AB, and make the vertical angles CEA and DEB equal; then the straight lines CE and DE are in one and the same straight line.

Because the straight line ED makes with the straight line AB upon one side of it, the angles AED and BED, these angles, by Prop. XIII., are equal to two right angles. But the angle CAE is, by hypothesis, equal to the angle DEB; to each of these equals, add the angle AED; therefore, the two angles AEC and AED are together equal to the two angles AED and DEB; but the two angles AED and DEB are equal to two right angles; therefore, by Axiom I., the two angles AEC and AED are together equal to two right angles. Because at the point E in the straight line AB, the two straight lines CE and ED upon the opposite sides of it, meet and make the two adjacent angles equal to two right angles; therefore, by Prop. XIV., the straight lines CE and ED are in one and

* The exercise to Prop. XII. was solved by THOMAS BOCOCK, Great Warley. The exercise to Prop. XIII. was solved by F. H., Brightwell; C. L. HADFIELD, Bolton-le-Moors; T. BOCOCK, Great Warley; QUINTIN PRINGLE, Glasgow; J. H. EASTWOOD, Middleton; E. J. BREMNER, Carlisle; D. H., Driffield; and ED. RUSS, Pentonville.

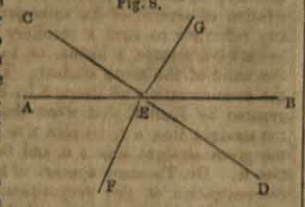
the same straight line. Therefore, if at a point in a straight line, &c. Q. E. D.

EXERCISE II. TO PROPOSITION XV.

If two straight lines cut one another, and the vertical angles be bisected, the bisecting lines are in one and the same straight line.

Let the two straight lines A B and C D, fig. S, cut one another in the point E; and let the two vertical angles A E D and C E B be bisected respectively by the straight lines E F and E G. Then the straight lines E F and E G are in one and the same straight line.

Fig. 8.



Because the two angles A E D and C E B are equal, and are respectively bisected by the straight lines E F and E G; Therefore, by Axiom VII., the angle F E D is equal to the angle C E G. But, by Prop. XV., the angle C E A is equal to the angle B E D; therefore, by Axiom II., the whole angle A E G is equal to the whole angle F E D. To each of these equals, add the angle G E B; therefore, the two angles A E G and G E B are equal to the two angles G E B and F E D. Again, because the straight line G E makes with A B upon one side of it the two angles A E G and G E B, these angles, by Prop. XIII., are equal to two right angles; therefore, by Axiom I., the two angles G E B and B E F are equal to two right angles. But at the point E in the straight line A B, the two straight lines E F and E G make the two angles G E B and B E F equal to two right angles; therefore, by Prop. XIV., the two straight lines E G and E F are in one and the same straight line. Wherefore, if two straight lines cut, &c. Q. E. D.*

Corollary.—If two straight lines cut one another, and if the vertical angles be bisected, the four bisecting lines will form two straight lines at right angles to each other.

LESSONS IN FRENCH.—No. LXXIII.

By Professor Louis Fasquelle, LL.D.

§ 87.—Regimen of Adjectives.

(1.) The regimen or complement of adjectives is a noun or a verb completing or defining their sense. Between the noun and the adjective comes one of the prepositions, à, de, dans, en, sur, &c. :—

Cet homme est digne *de louange.*	*This man is worthy of praise.*
Cet général est digne *de commander.*	*That general is worthy to command.*

In the first phrase, *louange*, in the second, *commander*, is the regimen of the adjective *digne*.

(2.) The regimen is not always necessary to the adjective. It is added to it only to give the latter a particular limitation :—

Without a regimen.	*With a regimen.*
Cet homme n'est pas content.	Cet homme n'est pas content *de son fils.*
That man is not pleased.	*That man is not pleased with his son.*

(3.) As may be seen in the last sentence, an adjective is not always, in French, followed by the same preposition as the corresponding adjective in English. Thus, after the adjective *content*, the French use the preposition *de* (*of*), while after its English representative (*pleased*), the preposition *with* must be employed. M. Bescherelle, and several other French grammarians, while acknowledging the difficulty, give us the consoling assurance, that "L'usage et les dictionnaires les feront connaître" (*use and dictionaries will make us acquainted with them*); that is, with the prepositions required after the adjectives. As the student will scarcely be *satisfait de cela*, we give a rule or two on this difficult subject, and add lists of adjectives with their proper accompanying prepositions.

(4.) When an adjective follows the verb *être*, used unipersonally, the preposition *de* is placed after that adjective, and before the verb following :—

Il est doux *de* mourir pour son pays.	*It is sweet to die for one's country.*
Il est plus *aisé* d'être sage pour les autres que pour soi-même. La Rochefoucauld.	*It is easier to be wise for another than for one's self.*
Il est plus glorieux *de* se vaincre soi-même, que de vaincre les autres. Scudéry.	*It is more glorious to conquer one's self than to conquer others.*

(5.) It should be recollected, that it is only when the verb *être* is unipersonal, that it thus seems to influence the choice of the preposition. In other cases, the adjective must be followed by the preposition proper to it. See § 88, 89, 90, 91, 92, below.

Cela est doux *au* toucher.	*That is soft to the touch.*
Cela n'est pas aisé *à* faire.	*That is not easy to be done (easily done.)*

§ 88.—List of Adjectives requiring the Preposition *de*.

Absent de, *absent (from)*	Glorieux de, *proud of*
Ambitieux de, *ambitious of*	Honteux de, *ashamed of*
Amoureux de, *in love with*	Impatient de, *impatient of*
Avide de, *eager for*	Incapable de, *incapable of*
Approchant de, *approaching, near*	Inconsolable de, *inconsolable for*
Capable de, *capable of, to*	Indigne de, *unworthy of*
Chéri de, *beloved by*	Indigné de, *indignant with*
Complice de, *accomplice in*	Inquiet de, *uneasy about*
Content de, *pleased with*	Ivre de, *intoxicated with*
Curieux de, *curious to*	Las de, *weary of*
Désireux de, *desirous to, of*	Mécontent de, *displeased with*
Dédaigneux de, *disdaining to*	Parent de, *related to*
Désolé de, *grieved with*	Plein de, *full of*
Différent de, *different from*	Ravi de, *glad to, of*
Digne de, *worthy of, to*	Rassasié de, *satiated with*
Envieux de, *envious of*	Reconnaissant de, *grateful for*
Eloigné de, *remote, far from*	Rempli de, *filled with*
Esclave de, *a slave to*	Redevable de, *indebted for*
Exempt de, *exempt from*	Soigneux de, *careful of, to*
Fâché de, *sorry for*	Sûr de, *sure of*
Fatigué de, *tired with, of*	Surpris de, *surprised of*
Fier de, *proud of*	Tributaire de, *tributary to*
Fort de, *confident in*	Victime de, *victim to, of*
Fou de, *excessively fond of*	Vide de, *void of*

Qui vit *content de* rien, possède toute chose. Boileau.	*He who lives content with a little, possesses all.*
Il n'est pas de Romain, Qui ne veût *désireux* de vous donner la main. Corneille.	*There is no Roman that is not desirous to reach you his hand.*

§ 89.—List of Adjectives requiring the Prepcsition *à*.

Accessible à, *accessible to*	Formidable à, *formidable to*
Accoutumé à, *accustomed to*	Fatal à, *fatal to*
Adhérent à, *adhering to*	Importun à, *importunate to*
Agréable à, *agreeable to*	Impénétrable à, *impenetrable to*
Ajusté à, *fitted for*	Indispensable à, *indispensable to*
Antérieur à, *prior to*	Intéressé à, *interested in*
Aisé à, *easy to*	Invisible à, *invisible to*
Ardent à, *zealous for*	Insensible à, *insensible to*
Assidu à, *assiduous to*	Naturel à, *natural to*
Attentif à, *attentive to*	Nécessaire à, *necessary to*
Bon à, *good for*	Nuisible à, *hurtful to*
Cher à, *dear to*	Odieux à, *odious to*
Conforme à, *similar to*	Postérieur à, *posterior to*
Contraire à, *contrary to*	Préférable à, *preferable to*
Cruel à, *cruel towards*	Propice à, *propitious to*
Difficile à, *difficult to*	Propre à, *fit for*
Enclin à, *prone to*	Rebelle à, *rebellious towards*
Etranger à, *a stranger to*	Redoutable à, *formidable to*
Exact à, *exact in*	Semblable à, *similar to*
Facile à, *easy to*	Sujet à, *subject to*
Favorable à, *favorable to*	

L'ignorance toujours, *est prête* à s'admirer. Boileau.	*Ignorance is always ready to admire itself.*
Insensible à la vie, *insensible* à la mort, Il ne sait quand il veille, il ne sait quand il dort. Racine.	*Insensible to life, insensible to death, he does not know when he is awake, or when he sleeps.*

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* Exercise I. to Prop. XV. was solved by F. H., Brightwell; E. Ross, Pennerville; T. Bocock, Great Warley; Quintin Friendly, Glasgow; J. H. Eastwood, Middleton; C. L. Hadfield, Bolton-le-Moors; D. H., Driffield; and Studiosus, Colchester. Exercise II. to Prop. XV. was solved by E. Ross, Pennerville; F. H., Brightwell; T. Bocock, Great Warley; Quintin Friendly, Glasgow; J. H. Eastwood, Middleton; C. L. Hadfield, Bolton-le-Moors; E. J. Brenner, Carlisle; and Studiosus, Colchester.

§ 90.—Adjectives requiring a Different Preposition in French and in English, not included in the above List, with the following Signification.

Bon pour, *kind towards, devoted to*	*Ignorant en, not versed in*
Célèbre pour, par, *celebrated for*	*Indulgent pour, indulgent towards*
Civil envers, *polite to*	*Insolent avec, insolent to*
Quand on est bon *pour* tout le monde, on ne l'est *pour* personne. C. Delavigne.	*Poli envers, polite to*
	When one is devoted to every body, one is so towards nobody.
Il fut célèbre *par* sa doctrine, autant que *par* sa naissance. Bossuet.	*He was celebrated for his doctrine, as well as for his birth.*

§ 91.—Remark.

It must not be forgotten, that when the verb *être* is used unipersonally before the adjectives contained in the two preceding sections, these adjectives become subject to rule (4.) § 87.

Il est indispensable d'étudier beaucoup pour devenir savant.	*It is indispensable to study much, to become learned.*

§ 92.—Important Rules.

(1.) A noun may be followed by two or more adjectives, having one and the same regimen, provided those adjectives require the same prepositions after them; thus we may say:—

Ce père est utile et cher *à* sa famille. Gérault Duvivier.	*That father is useful and dear to his family.*
La religion est nécessaire et naturelle *à* l'homme. Anonymous.	*Religion is necessary and natural to man.*

These two sentences are correct, because the adjectives, *utile*, and *cher*, in the first, and *nécessaire* and *naturel*, in the second, require the same preposition, *à*.

(2.) We could not in the first of these two sentences, substitute the adjective *chéri* (beloved) for the word *cher*, and say as in English, *That father is useful to, and beloved by his family*. Such a construction in French *is never admissible*. We must say, *That father is useful to his family, and is beloved by them*; because the adjective *chéri* requires the preposition *de*, or its substitute, the relative pronoun *en* [§ 39, (17.)].* Ce père est utile à sa famille et en est chéri, *i. e.* est chéri d'elle.

§ 93.—Determining Adjectives.—Demonstrative Adjectives.

The demonstrative adjective, which must not be confounded with the demonstrative pronoun [§ 36.], always precedes the noun, and must be repeated before every substantive. It assumes the gender and number of the word which it determines [§ 20, (1.)]:—

Cet air pur, ces gazons, cette volte mobile:	*That pure air, that turf, that changing vault; here every thing pleases the heart and charms the eyes.*
Ici tout plaît au cœur, tout enchante les yeux. Castel.	

§ 94.—Agreement, Repetition, and Place of the Possessive Adjective.

We have said [§ 21, (2.)] that the possessive adjective assumes the gender and number of the object possessed, and (4.) that it must be repeated before every noun. The place of the possessive adjective is the same in French as in English, that is, before the noun. These adjectives must not be confounded with the possessive pronouns [§ 34, (2.)]:—

Mon père, ma mère et mes sœurs sont arrivés.	*My father, mother, and sisters are arrived.*

§ 95.—Remarks.

(1.) It has been said [§ 77, (9.)] that the French use the article instead of the possessive adjective, when alluding to the parts of the body. This, however, must only take place where the possession is otherwise sufficiently explained. We must say, for instance:—

J'ai mal *à la* tête.	*My head aches (I have a pain in the head).*
Charles s'est cassé *le* bras.	*Charles has broken his arm.*

because the possession is sufficiently explained by the pronouns *je* in the first instance, and *se* in the second. But, we must say,

Je vois que mon bras s'enfle,	*I see that my arm swells.*

because without the *mon*, the possession of the arm would not be indicated.

(2.) The English expressions, *a book of mine, a cousin of his*, cannot be translated literally into French. We must say un de mes amis, *one of my friends*; un de ses cousins, *one of his cousins*.

Cinna et Carbon, *un de* leurs lieutenants, se campèrent sur les bords du Tibre. Ventot.	*Cinna and Carbo, a lieutenant of his, encamped on the banks of the Tiber.*

(3.) In familiar or jocose style, we sometimes use the possessive pronoun, *mien, tien, sien*, without the article, to express the same relation:—

A travers d'un *mien* pré, certain chien passa. Racine.	*Through a meadow of mine a dog was passed.*
Un *mien* cousin est juge-maire. La Fontaine.	*A cousin of mine is judge and mayor.*

(4.) When the possessor is an inanimate object, the adjectives *son, sa, ses, leurs*, can be placed before the object possessed, only when the possessor is the subject of the same proposition:—

La campagne a *ses* agréments.	*The country has its pleasures.*
Ces langues ont *leurs* beautés.	*These languages have their beauties.*

(5.) When the (*inanimate*) possessor is not the subject of the proposition, in which the possession is expressed, but of a preceding one, the article and the relative pronoun *en* are used [§ 39, (17.), § 110.]:—

Ce livre est bien imprimé, le papier *en* est excellent.	*That book is well printed, the paper (the paper of it) is excellent.*
J'habite la campagne; les agréments *en* sont sans nombre.	*I inhabit the country; the pleasures (the pleasures of it) are without number.*
Ces langues sont riches, j'en admire les beautés. Noël.	*These languages are rich, I admire their beauties (the beauties of them).*

(6.) Exception. The possession may be expressed by *son, sa, ses, leurs*, although the possessor be not the nominative of the same proposition, when the object possessed is the regimen of a preposition:—

Paris est une ville remarquable; les étrangers admirent la beauté de *ses* édifices. Noël.	*Paris is a remarkable city, foreigners admire the beauty of its edifices.*

CORRESPONDENCE.

UTILITY OF OUR JOURNAL TO THE THINKING POPULATION.

Sir,—It was my misfortune to have but very little schooling. I was apprenticed at the age of fourteen. While at school, I believe I was not accounted a blockhead; but when I left school, I had no thought of paying attention to the culture of my intellect any longer; in fact, I think I should never have thought of better educating myself, had not a gentleman given me a little advice upon the subject; and what was more important (for the advice, as is generally the case, would soon have been forgotten), kindly put into my hand the first part of the "Popular Educator." I have continued your excellent paper from that time, and I must say it has proved a wonderful boon to me. I think I am not exaggerating, when I say that it has entirely reformed my state of existence. From all the lessons I have derived great benefit, with the exception of the lessons in French and German, to which I have not yet turned my attention. I particularly admire Dr. Beard's lessons. The great care he has evidently taken to simplify and elaborately to explain his subjects (English, Latin, and now Greek, which I am glad to see), cannot fail, I should think, to make them intelligible to any ordinary capacity. I would admonish all to attend strictly to everything Dr. Beard advises them to do; if they do this, I am confident they will reap abundant reward. At the same time, they must remember that perseverance is the great thing. All the teachers in the world would do but little good, if *that* is wanting. The study of a language, I have found, requires

* The rule with regard to the regimen of verbs is equally imperative. We could not say in French, as in English, *Every week I write letters to, and receive letters from, my brother*. We must say, *Every week I write letters to my brother, and receive some from him*. Toutes les semaines j'écris des lettres à mon frère, et j'en reçois de lui.

great mental exertion. If the learner resolves in a manly way to exert himself, he will have no difficulty in mastering any of the lessons in the "P. E." I am right glad to see that Mr. Cassell has begun to publish a "Classical Library." I shall anxiously look forward to the appearance of some Latin authors in separate volumes, as I doubt not is intended when the "Reader" is completed. If the grammatical difficulties and idioms are explained (as it is said they are to be) in a simple and intelligible manner, nothing further will be required by the student who has read the "Lessons in Latin" in the "P. E." and I venture to predict that their cheapness will ensure an extensive sale. Thousands of students will bless the enterprising spirit of Mr. Cassell, who is known all over the kingdom as a great friend to education, and will, I make bold to say, be long remembered as such.

Feeling the amount of good the "P. E." has done to me, I cannot but be anxious for its welfare. I have endeavoured to make young people perceive its beneficial effects, by showing them that there never was so much learning to be had at such a cheap rate. Being myself slightly connected with a school, I have now and then given a number to the well-behaved scholars, which I find they like better than the paltry trash usually devoted to this purpose; and I have often found that it has induced them to continue the numbers at their own expense. Of course this has only been done with the higher scholars, but it is easily seen that a good deal, if done in the right direction, will tell upon the masses. I recommend this plan to schoolmasters. A volume of the "P. E." would be a useful prize to a deserving boy in a National School.

I have reason to believe that a vast deal of good would arise from the introduction of the "P. E." among domestic servants by their employers. I know two masters having each a housemaid and nursemaid who used to send into the kitchen every week, the "Family Herald," the "London Journal" and other such papers for the servants' recreation when at leisure; I asked them to try the "P. E.;" they have done so, and find that the numbers are made good use of. Could not the same be done elsewhere? I would recommend it. Servants have generally a few hours a day to themselves, and how can they employ that time better than by a little useful reading. Excuse my presumption in suggesting that something could be introduced into the "P. E." expressly adapted for girls, say Domestic Economy or something to the purpose of their domestic life. I am convinced that it would have a great influence in increasing its circulation among females, which is at present nothing compared with that among the males.

As I am truly thankful for the service your paper has done to me, and am therefore anxious to see it thriving vigorously, I should feel, I must say, some satisfaction, if what I have said should be deemed fit to be made public, so as to show other young men the excellent advantage they have of improving their understanding through the instructive pages of the "Popular Educator."

I remain, Sir, a sincere friend of the "Popular Educator,"

ABERCROMBIE HYATT,
A Sunday School Teacher.

London.

ANSWERS TO CORRESPONDENTS.

J. G. ANDERSON.—The question, "Why was light created on the first day, when the sun, the primary cause of light, was not created till the fourth?" is one commonly proposed by infidel philosophers, who think that because this part of the Mosaic account of the creation does not agree with their notions of simplicity and sequency in matters of philosophy, it is therefore not entitled to credit in itself, and that it likewise throws a degree of doubt over the whole Scripture history. We would remind all such philosophers and their followers, that there is a great difference between what is contrary to reason and what is beyond reason; and that, therefore, in every question of difficult interpretation, it becomes them, before they dare to impugn its validity, to demonstrate either that it is contrary to reason or that it is contrary to the nature of things, whether we are able or not to conceive of its possibility. Many well-meaning persons have deemed it a species of profanity to make these questions a subject of discussion, from the unwarrantable fear that the truth might, by such means, be materially injured. But truth, whether physical or moral, never suffers by investigation; on the contrary, it will come forth from such scrutiny like gold from the furnace. In entering on the present subject of inquiry, it is necessary to advert to the origin of all things. "In the beginning, God created the heavens and the earth." In what state did matter exist at this period? "The earth was without form, and void;" or, as the original words signify, it existed in a state of chaos, darkness, and confusion. The Great Being who thus gave existence to matter, in this rude and imperfect state, could have as easily commanded the whole system of the universe, harmonious and beautiful as it is, into full and perfect existence in one instant of time. He willed a different mode of procedure. The work of creation was progressive. The whole was reduced to order in six days. The agency employed was the *word* of God. "He spake, and it was done; he commanded, and it stood fast." He said, "Let light *be*," and light *was*. These representations accord with the mighty fiat imagined in antiquity, expressed by Ovid, traced to Moses, applauded by Longinus, and found to coincide with the universal idea among mankind, of a first principle impregnating the chaos, and giving birth to Nature. The first impression made upon matter by the Creator was the communication of separate existence to a portion of it, which constituted *light*. This may have taken place by the instantaneous abstraction of the latent particles of light from the whole mass. They might then exist in a fluid state, darting their rays into the infinity of space, and waiting the command of Him who called them forth from their obscurity. Indeed, here we can find no difficulty in supposing the pre-existence of light to that of the sun, since He who dwells in "light that is inaccessible," far other than the rays of the sun which we mortals behold with impunity, could equally disperse this wonderful effect of his power over all created matter, as concentrate it into an innumerable multitude of solid masses, from which its rays might be reflected to their respective systems. Some have conjectured that the sun was then in existence, but had not yet become visible, either for want of an atmosphere in the earth, in itself, or in both. This seems not to be without foundation, as we know that the atmosphere of our earth was not created till the second day of creation, when the *firmament*, or *expansion*, was made, as the original word signifies. The same invisibility of the sun, however, would have been the result of the non-existence of its atmosphere, as we have almost presumptive evidence, from the phenomena of solar spots, that the body of the sun is opaque: these spots being supposed to be cavities in it, through which the dark matter of the sun is observed. The creation of this atmosphere of light around the sun, on the fourth day, will amount to an explanation of the question, while it would be absurd to suppose that light could exist nowhere but in the sun, when He who formed it, on the first day of the creation, was *present* at the gradual accomplishment of his "handy-work." Objectors will, no doubt, be ready to call in question the propriety of attributing so much importance to the earth, as to suppose that the sun, a globe of such magnitude that it is one million three hundred thousand times greater than our globe, was formed in this way solely for her use; while so many planets, some of which are a thousand times greater than it, are all equally dependent upon the sun for the light and heat which they enjoy. It is not necessary, however, to suppose that the earth alone was formed at the beginning of the world; the other planets may have been created at the same time, and may have been subjected to a similar mode of procedure at their creation. Moses does not profess to give a history of the universe, but merely an account of the creation of the world. On the fourth day, the sun and the moon were created, which are described by the historian, according to their visible appearance, as "the greater and the lesser lights;" his language being accommodated to the popular sense, rather than confined to philosophical precision. The moon, although much less than the sun, approaching so near us, appears of almost equal magnitude; and though far inferior in dimensions to those heavenly and distant bodies which are so insignificant to the naked eye, she yet occupies a more important and useful station to us, in her immediate connection with the globe which we inhabit. Such a mode of expression, conformed to ordinary appearances, is perfectly allowable, interferes with no system of philosophy, and is rendered more valuable, as it sinks to the level of the meanest comprehension. The heavenly bodies are evidently represented in their immediate relation to us, when their uses are specified: "to give light upon the earth"—to distinguish between day and night—to measure out and to regulate the seasons of the year. The ancients regarded them as signs of another order, and built upon this imagination the splendid, imposing, but unphilosophical and futile theory of astrology. The sacred historian states, that "He made the stars also;" but whether on that day, or whether the account extends to the entire universe, to the sun, moon, and earth only, or to the solar system, of which our globe is a part, and which some celebrated writers have considered most probable, the history does not determine. Of the same nature is the inquiry whether angels were created on the first day, and as the first work of that day?—or, whether they subsisted before, and were called into being at some unknown and more remote period, selected from eternity? We only know that they witnessed the process of the creation—which, indeed, they might have done had they been only the first created on the first day. Of their creation Moses does not speak, but Job assures us (or rather the Supreme Being addressing himself to Job) that at the creation of the earth "the morning stars sang together, and all the sons of God shouted for joy."

LESSONS ON PHYSICAL EDUCATION.—No. VII.

(*Continued from page* 319.)

SWIMMING.

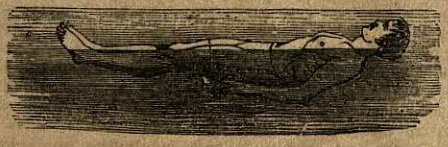
Exercise 1. Swimming with extended arms. This exercise is sometimes called *Frog Swimming*, because it is performed in exact imitation of the motions of the animal in water, from which it has received the name. Having selected a place in a river, or a bath constructed for the purpose, where the bank or the tank slopes downward in a gradual manner, the learner walks into the water until it reaches his shoulders, and turns round with his face to the commencement of the slope. He then raises his hands up to his chest, and places the palms of his hands and the fingers against each other, with the thumbs

Fig. 34.

upwards. Next, he leans gently forward in the water, keeping his head upright, and suddenly lifting his feet from the ground, with the heels close together, as high as he possibly can, by a simultaneous and powerful motion, he separates his hands and feet, striking the former out before him, and the latter behind him. The hands in making the stroke, as it is called, must be raised as high as the shoulders. The next stroke is made thus: the palms of the hands, which have been separated, are turned downwards and backwards in a curved direction, and restored to their original position in the shortest way possible; at the same time, the feet are brought together and lifted up as before; then the stroke is repeated, as above described, at the instant that the body begins to sink; but the learner must avoid the common error of repeating the stroke in a hurried manner, or diminishing the interval of time, by throwing out either the upper or lower extremities too soon. He must *hasten slowly*. Fig. 34.

Exercise 2. Swimming upon the back. This exercise is very useful, and comparatively easy after the learner has acquired confidence in the watery element. It enables the swimmer to rest himself as it were in the water, when tired of rapid progressive motion as in the former exercise, and it is usefully employed as a means of preventing his feet and legs from becoming entangled in sea-weeds or water-plants.

Fig. 35.



The learner being immersed in water to the shoulders as before, lays himself gently on his back in the water, then striking with his legs and feet, he brings himself to the surface of the water, so that the body and the legs are in a straight line parallel to that surface, and the face, the chest, and the toes are above it, the arms being close to the sides. Locomotion is effected by using the arms as oars, and the feet as has been described in the preceding lesson. Fig. 35.

Exercise 3. Cut-water swimming. It requires very considerable practice to perform this exercise; but when once learned the swimmer can cut through the water with the greatest rapidity, and thus escape the dangerous effects of eddies and currents.

The learner having immersed himself to the shoulders as before, lays himself upon his chest and stomach in the water, throws his right arm forwards out of the water, and bending his fingers so as to form a hollow in the hand like a cup, he dips it into the water and draws it quickly towards his chest in a straight line, allowing it then to fall behind his body; at the same time he performs with his feet the same stroke as he did in the first exercise. But as soon as the body begins to sink, he instantly performs the same operation with the left hand which he did with the right; and so on alternately. During the progressive motion thus obtained, the body floats upon the right side, while the right arm is in motion, and on the left side when the left arm is in motion; the ears are occasionally wetted during the alternate operation of the arms. Fig. 36.

Exercise 4. Swimming like a dog is the most natural to the human being, and is accomplished by simply imitating the motions of that animal in the water, that is, by raising the hands and feet and striking them out simultaneously and alternately, the left leg moving with the right arm, and the right leg with the left arm.

Fig. 36.

Exercise 5. Diving is a part of aquatic exercise essential to the swimmer; he should be able to plunge fearlessly into or under the water; for unless he can do so, almost all the advantages of learning to swim are lost both to himself and others. Indeed many a good swimmer, for want of practice in this exercise, and influenced by fear, has lost both his own life and that of another whom he has attempted to rescue from a watery grave. If the art of swimming was only required as an amusement or a means of preserving health, it would not be quite so necessary to know how to dive; but the end proposed by your learning to swim is to be able under any circumstances to save human life, your own or that of others; and therefore, the habit of plunging into water and diving to the bottom without fear or confusion, is well worthy of your acquisition. You could then, if you happened to fall into a river or over a ship's side, or were wickedly precipitated into water by design, make your escape with the greatest ease; and if you were pursued for your life or liberty, or wished to save any one in danger of drowning, from whatever cause, you could equally accomplish your own safety or that of another.

The art of diving may be learned with the assistance of another person in performing the first lessons. Choose a place in the river where the water reaches only to the knees, sit down and hold the person by the hands, while he is standing face to face with you; hold your breath and lean backwards under the water; as soon as the water has covered your face, let him raise you again to the sitting posture, until you can breathe freely. Repeat this exercise, until you are able to remain a minute or two under water, and until you can lean backwards in the same manner under the water, and raise yourself again, without the assistance of his hands. This is generally accomplished in the first lesson.

To learn to dive without the assistance of another person, go into the water up to the middle, and inhale as much air as you can, sit down, and holding your breath, remain a few seconds under water. Then rise up, and having taken breath, repeat the same exercise. A little water will enter the ears and the nostrils, but this inconvenience will soon be overcome; the slight deafness and buzz in the ears arising from the water, need occasion no disquietude; for it will go out imperceptibly, and the hearing will become the same as before. When you wish to accustom yourself to retain your breath and to plunge your

head into the water, seek for a place of much greater depth. After swimming for some moments on the surface, plunge head foremost, suddenly bending the body and raising the feet upwards, and extending the arms downwards, keeping the inverted vertical position till you reach the bottom. To rise again to the surface, turn round with your head upwards and strike with your feet downwards alternately, as if you were ascending a ladder, making the same movement with your hands, having the palms downwards, and imitating the action of swimming like a dog as before described.

If you open your eyes in sandy water, you will experience a slight smarting pain when they come into the air; but not if the water be pure and free from mechanical mixture. In all cases it is better to shut your eyes in the water, and open them only in the air, in order to prevent the space between the eyelids and the pupil from being filled with gritty matter, a circumstance sufficient of itself to deter a beginner from practising the exercise. In diving and swimming under water, it is best to assume the horizontal position, and to swim like a frog as if you were at the surface.

Exercise 6. Swimming with the clothes on. In case of accidents, every one who has had opportunity should be able to swim in this manner; and it may be learned gradually. When the swimmer can perform the first exercise well, he may begin by attempting to swim with boots on, then with trowsers in addition to these, and so on, until he has by degrees learned to do it clothed in his every-day dress. Of course, economy will suggest that an old dress will do as well as a new one.

There are various other exercises besides these, practised by expert swimmers, but as we have given an account of the most important exercises in this department of physical education, we may be spared the necessity of further details.

Most swimmers have experienced in some degree that painful contraction of the muscles in water, denominated *cramp*. An attack of this kind generally renders the limb affected useless for the time, and retards, if it does not wholly prevent the swimmer from making progress in the water. The swimmer, however, should never be alarmed by the cramp, nor lose his presence of mind for a moment; if he does so he is almost sure of losing his life. As soon as the swimmer is seized with the cramp, he should turn on his back, and keep himself afloat in this position until the attack has ceased, or the pain is quite gone. It would be still better, if possible, if he could perform the exercise of swimming on the back, as above described, or at least keep himself in this position, moving towards a place of safety. We conclude by giving some rules to be observed in attempting to save a drowning person.

First examine well the position in which you ought to approach him; unless you do so he will be sure to grasp you by the arms, the body or the leg, and unless you have the fabled strength of Hercules, you will not be able to relieve yourself from his grasp; a tremendous wrestling, impelled on his part by despair, will ensue, and you will be sure to lose your life along with him in the watery contest. Take care that he does not observe your approach, and pass behind him, seizing him under the arms, and pushing him towards the shore or boat, swimming with your feet. If he has become senseless, he may be seized by the hair of the head, and dragged through the water to a place of safety. When asphyxia (stoppage of the pulsation) has occurred through his immersion in the water, adopt the following rules. 1st. Send immediately for the nearest doctor. 2nd. Never suspend the body by the feet; this would be certain death. 3rd. Strip it, dry it in a blanket, and lay it upon a bed or mattrass with the head and chest raised above the rest of the body. 4th. Free the chest from the gases and mucous filth which may obstruct its functions, either by gentle inspiration, by the air-pump, or by a syringe directed into the air passages of the body; but this must be done by a professional man. 5th. Press alternately and gently the stomach and the chest, in order to produce motions analogous to those of breathing. 6th. Rub the chest, back, thighs, legs, and arms with warm flannels or a soft brush. 7th. Warm the body by placing it before a clear fire. This must be done, however, with great precaution. 8th. When the breathing and circulation appear to have recommenced, give the patient about a spoonful of brandy in two spoonfuls of hot water sweetened with sugar, and administer an injection of warm water with a spoonful of salt dissolved in it. 9th. If the patient sleeps and the face becomes red, apply, without waking him, some mustard plasters to his feet and the calves of his legs. 10th. Never give over your attempts at resuscitation until a medical man shall have pronounced the patient to be dead; remembering that there have been cases in which persons supposed to have been drowned, never gave any sign of life for six hours, and were nevertheless brought back to life by careful attention and perseverance.

LESSONS IN ENGLISH.—No. LXIII.

By John R. Beard, D.D.

ADVERBS.

Adverbs qualify the action of verbs, and so stand in the relation to verbs which is borne by the adjective toward the noun. Now an action may be viewed either as to the place where it was done, the time when it was done, and the manner in which it was done; e. g.

The theft was adroitly committed here yesterday.

In this instance *the place* is indicated by *here*, *the time* is indicated by *yesterday*, *the manner* is indicated by *adroitly*.

But manner is a quality which admits of variation; one theft may be committed *more* or *less* adroitly than another; a theft may be committed *most* adroitly.

We thus obtain four classes of adverbs, 1. *Adverbs of place*, 2. *Adverbs of time*. 3. *Adverbs of manner*. 4. *Adverbs of degree*.

Adverbs may be regarded also in reference to their component parts, and may so be divided into, 1. *the primitive*, 2. *the derivative*, 3. *the compound*. Of primitive adverbs take as instances *when*, *then*, *here*, *there*; of derivative adverbs take as instances *justly* (from just), *yearly*, *surprisingly*. Of compound adverbs take as instances *sometimes*, *nowhere*, *to-morrow*.

I will first say a few words on the formation of adverbs and then present a number of adverbs arranged in classes, ending this chapter with some remarks on certain adverbs which may require elucidation.

The manner in which compound adverbs are formed from simpler forms is very obvious. *Sometimes* is made up of the adjective *some* and the noun *times*, *oftentimes* consists of the adverb *often* and the noun *times*.

Adverbs are ordinarily formed by the addition of the ending *ly* to a noun, an adjective, or a participle; as man, man*ly*, wise, wise*ly*, loving, loving*ly*. The termination *ly* is an adjective as well as an adverb termination, being from the German *lich*, as in mann*lich* (Anglo-Saxon *lice*) *manly*; but in *early*, *dearly*, &c. it has an adverbial force.

When an adjective terminates in *ly*, the adverbial suffix *ly* is not added; the second *ly* being omitted for the sake of sound, since such forms as *godlily*, *heavenlily*, *friendlily* would be very unpleasant; accordingly we say "he was received" not friendlily but *amicably*, or "in a friendly manner."

If the adjective ends in *le*, the termination is changed into *ly*; as noble, nob*ly*, for noblely; so idle, id*ly*. In whole, the *l* is doubled, as whole, who*lly*.

Adjectives of more than one syllable ending in *y* change the *y* into *i* before *ly*, as easy, eas*ily*; angry, angr*ily*, hearty, hear*tily*.

Monosyllables ending in *y* either retain the *y* or change it into *i*; as dry, dry*ly*, day, da*ily*.

If the adjective ends in a double *l*, *y* simply is added; as full, full*y*; but manful, manful*ly*; cheerful, cheerful*ly*.

The degree is marked in adverbs of degree by *more* and *most*, *less* and *least*; as wisely, *more* wisely, *most* wisely; actively, *less* actively, *least* actively.

But inflection properly so called belongs to some few adverbs; as *late*, *later*, *latest*; *near*, *nearer*, *nearest*; *often*, *oftener*, *oftenest*; *soon*, *sooner*, *soonest*. Hence we find in adverbs the forms *er* and *est* used in forming the degrees of comparison in adjectives.

There also occur adverbs which are irregularly formed; as *ill*, *worse*, *worst*; *well*, *better*, *best*; *much*, *more*, *most*; *lately*, *latterly*, *lastly*. *Worse* and *worst* are, however, from a root different to that from which *ill* comes; so is it with *well*, *better*, *best*.

Adverbs of place may be subdivided into those which answer to the question *where?* those which answer to the question *whither?* those which answer to the question *whence?* and those which denote *order*.

1. *Adverbs of place* at, or in, which are—where, here, there,

yonder, above, below, about, around, somewhere, anywhere, elsewhere, everywhere, nowhere, wherever, wheresoever, within, without, whereabout, hereabout, thereabout. The preference for a long-drawn sound at the end of a word has added an *s* to these three words, making them hereabouts, thereabouts, whereabouts; the same regard to sound has converted the preposition toward into towards. The retention of the *s* is a matter of doubtful propriety.

2. Adverbs which denote *motion to a certain place* are—whither, hither, thither, up, down, back, forth, aside, ashore, abroad, aloft, home, homeward, inward, upward, downward, backward, forward. Some of the adverbs ending in ward are also used as adjectives; e. g. a forward (froward) child, a backward scholar; when used with an adverbial force, they are often found terminating in *s*, as backwards, outwards. *Up* and *down* may have the construction of prepositions; as,

Up the side of the house ran the flames.
The bucket went *down* the side of the well.

In order to know whether these and other words are adverbs or prepositions, you must study their construction. If, as here, nouns are dependent on them, they are prepositions; but if they go in immediate union with verbs, they are adverbs.

3. The third subdivision embraces adverbs *which denote motion from, or to a place*; as thence, whence, hence; sometimes pleonastically given, as from hence, &c.; the word pleonastically (from the Greek) is employed to signify that more is said than is necessary to convey the sense according to the laws of grammar.

4. Besides, there are adverbs which indicate *the order of place*; as first, secondly, thirdly, fourthly, &c.; thus secondly means in the second place in a series of heads or topics constituting a discourse, a speech, a chapter in a book.

Adverbs of time may be arranged in the following classes.

1. *Adverbs of time present*; now, to-day, now-a-days, yet, instantly, immediately, straightway, directly, forthwith. It is curious that presently, though from present, has ceased to refer to the present, and now refers to time shortly to come.

2. *Adverbs of time past*; already, just now, lately, recently, yesterday, formerly, anciently, once, heretofore, hitherto, since, till now, long ago.

3. *Adverbs of time to come*; to-morrow, hereafter, henceforth, henceforward, by-and-by, soon, ere long, shortly.

4. *Adverbs of time relative*; when, then, first, before, just now, after, while, meanwhile, seasonably, betimes, early, late, whenever, afterward.

5. *Adverbs of time absolute*; always, ever, aye, never, eternally, for ever, evermore, endlessly, everlastingly.

6. *Adverbs of time repeated*; oft, often, again, occasionally, frequently, sometimes, seldom, rarely, daily, weekly, monthly, yearly, annually, once, twice, thrice, three times.

Adverbs of *manner* may be placed in these categories; namely:

1. *Manner from quality*; well, ill, wisely, foolishly, justly, wickedly.

2. *Affirmation or negation*; yea, nay, yes, no, not, nowise, nohow, verily, truly, indeed, surely, certainly, doubtless, undoubtedly, assuredly, forsooth, that is, *for truth*, equal to "indeed!" (used ironically) amen.

3. *Doubt* or *uncertainty*, haply (by hap, that is by chance) perhaps, possibly, perchance, peradventure, may be.

4. *Manner generally taken*; thus, so, how, somehow, nohow, anyhow, however, howsoever, else, otherwise, across, together, apart, asunder, namely, particularly, necessarily, extempore (off-hand, without the aid of a manuscript), headlong, lengthwise.

There are many *adverbial phrases*, such as, not at all, in no way, by no means, in fine, &c. These may be considered as forming adverbial compounds. Indeed compound adverbs might be termed adverbial phrases. The following may also be conveniently ranked among adverbial phrases; *not a rush* ("I care not a rush") *not a groat, post* (he travels post).

Adverbs are occasionally employed with *the force of nouns*; e. g.

"Shall I tell you why? Aye, Sir, and wherefore, for they say every *why* hath a *wherefore*."—*Shakspeare.*

Adverbs are found where adjectives would be used, if adjectives of the requisite kind existed. Thus we say "the present bishop of London," also *a former* bishop, and a *future* bishop, but we have no adjective to characterise a bishop as being a bishop at a particular point of time past, and so we say "the *then* bishop;" the licence may be considerable, but it prevents an awkward circumlocution; e. g.

"The *then* bishop of London, Dr. Laud, attended on his Majesty."—*Clarendon.*

Adverbs are sometimes superseded by adjectives; thus we say, speak *low*, look *sweet*, drink *deep*, run *quick*, rise *early*, go to bed *late*, cut *short*, look *clean*, deal *hard*, *scarce* seven. In some instances, however, the adjective retains its own power, and expresses a meaning different from that which would ensue from the corresponding adverb. Thus,

Adjective.	She looks sweet.
Adverb.	She looks sweetly.

These two forms vary in meaning; the first signifies that she is not only sweet, but looks so; the second means that whether she is sweet or not, she throws out a sweet look.

THE CONJUNCTION: THE INTERJECTION.

Conjunctions (from cum *with* and jungo *I join*) are words whose office is to connect words together. They are closely allied to adverbs. It is sometimes not easy to determine whether a word is a conjunction or an adverb. *Therefore* and *wherefore*, for instance, have been called conjunctions, they have also been placed among the adverbs. If, however, we adhere to our definitions we should declare *therefore* and *wherefore* as conjunctions, since they connect words rather than qualify a verb.

Conjunctions also connect sentences. Those sentences may be complete or incomplete.

While conjunctions connect words they may disconnect ideas; e. g.

The man or the woman was drowned.

The *or* connects together man and woman, but so as to leave it doubtful of which of the two the assertion in the verb is to be made. This view removes the apparent absurdity of what are called disjunctive conjunctions, that is, in plain Saxon, not-joining joiners. But a word may join in one way and disjoin in another.

Conjunctions may be divided into the *copulative*, the *disjunctive*, and *the corresponsive*.

The copulative are those which simply join words, as and.

The disjunctive are those which while joining words disjoin affirmations; as or; e. g.

The man or the woman died.

Here *man* and *woman* are connected in form by the disjunctive conjunction *or*, and by the same particle they are disjoined in regard to the declaration made in the verb. One of the two died, but which of the two died, the reporter does not know.

The corresponsive are such conjunctions as introduce corresponding sentences or members of a sentence, forming in each case a pair of corresponding or contrasted objects; as if, then; whether, or.

Copulative Conjunctions.

And, as, both, because, even, for, if, that, then, since, seeing, so, whereas, that.

Disjunctive Conjunctions.

Or, nor, either, neither, than, though, although, yet, but, except, whether, lest, unless.

Corresponsive Conjunctions.

Both—and; as—as; as—so; if—then; either—or; neither—nor; whether—or; though—yet.

This division proceeds on the ground of the functions which conjunctions discharge. If we contemplate conjunctions in regard to their import also, we may divide them into these classes:—

1. *Copulative*, and, also, both.
2. *Disjunctive*, either, or, neither, nor.
3. *Concessive*, though, although, albeit.
4. *Adversative*, but, yet, notwithstanding, nevertheless.
5. *Causal*, for, that, because.
6. *Inferential*, therefore, wherefore, seeing, since, forasmuch.
7. *Final*, that, in order that, to the end that.
8. *Conditional*, but, if.
9. *Exceptive*, unless, save, except.
10. *Diminutive*, at least.
11. *Dubitative*, whether or not.
12. *Expletive*, now, truly, indeed.
13. *Ordinative*, thereafter, finally, moreover, however.
14. *Declarative*, namely, to wit.

The *concessive* are such as denote a concession or yielding. The *adversative* are such as denote opposition or contrast. The *causal* are such as denote a cause, occasion, reason, or ground. The

inferential are such as denote an inference or deduction. The *final* are such as denote an end, aim or object. The *conditional* are such as denote a condition or requirement. The *expletive* are such as denote words which fill up a sentence not being absolutely necessary to the sense. The *ordinative* are such as denote the order, rank, or succession of things or acts. The *declarative* are such as supply explanations.

It may be doubtful whether *save* and *except* are ever used as conjunctions. In an instance given in proof that save is a conjunction, namely,

"And nothing wanting is, *save she*, alas!"—*Drummond of Hawthornden.*

the *she* ought to be *her*, as in the following, where the pronoun is governed in the objective by save :—

"And all were gone, save *him*, who now kept guard."—*Rogers.*

Conjunctions are words of great importance They are the very hinges on which turn the boundless thoughts of man. For their correct use a very careful study of the best authors is requisite; and requisite also is much mental discipline. Bad English appears in nothing so soon as in an inaccurate use of the conjunctions.

"The current is often evinced by the straws,
And the course of the wind by the flight of a feather ;
So a speaker is known by his *ands* and his *ors*,
Those stitches which fasten his patchwork together."

Interjections (from inter *between* and jacio *I throw*) are words which give expression to some sudden feeling or strong emotion on the part of the speaker, as o ! oh ! alas ! pshaw ! Interjections are in part inarticulate, being simply a breathing, as the low, deep-sounding, long-drawn oh ! of great pain.

Some degree of order may be given to the interjections common in our language.

There are interjections of,

1. *Joy* eigh ! hey ! io !
2. *Approbation*, good ! bravo ! well-done !
3. *Sorrow*, oh ! ah ! alas ! well-a-day ! alack !
4. *Wonder*, o ! heigh ! ha ! indeed ! strange ! when !
5. *Pain* or *fear* oh ! ah ! eh ! O dear !
6. *Contempt*, pugh ! pish ! pshaw ! tush ! tut ! humph !
7. *Aversion*, foh ! fough ! off ! begone !
8. *Disapprobation*, fie ! no !
9. *Invocation*, ho ! what ho ! hollo ! hallo ! hoy ! ahoy !
10. *Exultation*, ah ! aha ! huzza ! hurrah !
11. *Laughter* or *delight*, ha, ha, ha ! he, he, he !
12. *Salutation*, welcome ! hail ! all-hail !
13. *Calling attention*, ho ! lo ! ho there ! see ! look ! la ! law ! behold !
14. *Requiring silence*, hush ! hist ! whist ! 'st ! mum !
15. *Surprise* or *horror*, oh ! ha ! hah ! what !
16. *Weariness* or *languor*, heigh-ho ! heigh-ho-hum ! o dear ! o dear me !
17. *Stopping*, hold ! soft ! arvint ! avast ! whoh !
18. *Parting*, farewell ! adieu !
19. *Detecting*, oho ! ahah ! ay-ay !
20. Interrogating, eh ? ha ? hey ?

As an exercise in composition, read twice or thrice over any interesting narrative, and then laying aside the book, write down the substance of it from memory. Having done so, correct what you have written by the original.

LESSONS IN FRENCH.—No. LXXIV.

By Professor Louis Fasquelle, LL.D.

§ 96.—Numeral Adjectives.

(1.) The cardinal number used simply to indicate number, not order, precedes the noun.

(2.) When used to indicate order [§ 26, (3.)], the cardinal number generally follows the noun (except when indicating the day of the month) [§ 26, (1.)] :—

Léon *dix*.—Chapitre *dix*. *Leo the tenth.—Chapter ten.*

(3.) The ordinal number is placed before the noun :—

La *dixième* année. *The tenth year.*

(4.) It follows the words *chapitre, livre, article, page,* &c., in the division of a book :—

Livre *sixième*, chapitre *dixième*, *Sixth book, tenth chapter.*

§ 97.—Indefinite Adjectives.

(1.) *Quelque* is written in three ways :—

1. Followed by a verb, it is written in two words, *quel que*; the first, *quel*, which is an adjective, agrees in gender and number with the subject of the verb, and the second, *que*, which is a conjunction, is invariable.

Mais *quels que* soient ton culte et ta patrie.
Dors sous ma tente avec sécurité.
Campenon.

But, whatever may be thy religion or thy country, sleep in security under my tent.

Cet homme *quelle que* fût sa fortune ou son mérite, ne put réussir dans ses entreprises. Boniface.

That man, whatever his fortune or his merit might be, could not succeed in his undertakings.

2. Followed by a noun, it is then an adjective [§ 30, (12.)], and agrees in number with that noun :—

Princes, *quelques* raisons que vous puissiez me dire. Racine.

Princes, whatever reasons you may give me.

3. *Quelque* followed by an adjective, or an adverb, is invariable :—

Les jeux de hasard, quelque médiocres qu'ils paraissent, sont toujours chers et dangereux.
Mme. de Genlis.

Games of chance, however trifling they may seem, are always expensive and dangerous.

2. *Même* is an adjective or an adverb :

It is an adjective [§ 30, (5.)] :

1. When it precedes the noun, and means *same* :—

Vous retombez toujours dans les *mêmes* alarmes. Racine.

You always fall into the same apprehensions.

2. When it follows a noun or pronoun, and has the sense of *himself, herself, themselves, even, very*, and cannot be turned into de la même manière, *in the same manner* :—

Les dieux eux-*mêmes* devinrent, jaloux des bergers. Fénélon.

The gods themselves became jealous of the shepherds.

Ces murs *mêmes*, seigneur, peuvent avoir des yeux. Racine.

These very walls, my lord, may have eyes.

(3.) It is an adverb and is invariable, when it modifies a verb, an adjective, or a participle. It has then the sense of aussi, *also* ; quoique, *although*, or de la même manière, *in the same manner* :—

Frappez, Tyriens et *même* Israélites. Racine.

Strike, Tyrians and Israelites also.

Leurs vertus et *même* leurs noms étaient ignorés.
Bernardin de St. Pierre.

Their virtues, as well as their names, were unknown.

Exempts de maux réels les hommes s'en forment *même* de chimériques.

When exempt from real misfortunes, men create to themselves imaginary ones.

(4.) We have seen that *tout*, when an adjective, that is, when signifying *every, all*, is variable [§ 30, (15.) (16.)].

(5.) *Tout*, when it means *entirely, quite, nothing but*, is an adverb, and, as such, invariable :—

Le lion est *tout* nerfs et muscles. Buffon.

The lion is nothing but nerves and muscles.

Il montra pour rimer des chemins *tout* nouveaux. Boileau.

He showed us, in poetry, paths entirely new.

Le chien est *tout* zèle, *tout* ardeur, *tout* obéissance. Buffon.

The dog is nothing but zeal, ardour, and obedience.

(6.) But, here, is the same *invariable* word, variable by *euphony*, before a feminine word, commencing with a consonant or an *h* aspirate :—

Les plaisanteries ne sont bonnes que quand elles sont servies *toutes* chaudes. Voltaire.

Jokes are only good, when they are served up quite warm.

The following extract (for the historical accuracy of which we cannot vouch) offers an example on the last rule, and on the exception :—

La vanité est sortie *toute* parée de la tête des femmes comme Minerve est sortie *tout* armée de la tête de Jupiter. Saint Lambert.

Vanity issued quite adorned from woman's head, as Minerva issued quite armed from the head of Jupiter.

§ 98.—The Pronoun.—Place of the Personal Pronoun, Subject of the Verb.

(1.) Personal pronouns, used as subjects of verbs, are in French, as well as in English, placed before them in affirmative and negative sentences :—

J'inventai des couleurs, j'armai la calomnie, J'intéressai sa gloire ; *il* trembla pour sa vie. RACINE.	*I invented colours, I armed calumny, I touched his glory ; he trembled for his life.*

(2.) In affirmative or negative sentences commencing with *au moins, à peine, encore, peut-être, en vain, du moins, combien*, &c., the pronoun may elegantly be placed after the verb, although this construction is not imperative :—

Peut-être avez-*vous* raison. NOEL.	*Perhaps you are right.*
Peut-être *vous* entretiendrai-*je* aussi de l'astronomie. AIMÉ-MARTIN.	*Perhaps I will converse with you on astronomy.*
Combien (l'homme) perd-*il* de vœux, combien fait-*il* de pas ! LA FONTAINE.	*How many wishes he loses, how many steps he takes!*

(3.) In exclamations, the nominative pronoun is often placed after the verb in French, as well as in English :—

Puissé-je de mes yeux y voir tomber la foudre ! CORNEILLE.	*May I with my own eyes see the thunder crush it !*

(4.) In interrogative sentences the nominative pronoun is placed immediately after the verb in the simple tenses, and between the auxiliary and the participle in the compound :—

Où suis-*je* ? qu'ai-*je* fait ? que dois-*je* faire encore ?	*Where am I? what have I done? what have I yet to do ?*

(5.) In interrogative sentences with verbs having only one* syllable, in the first person singular of the indicative present, and with some verbs having more than one syllable, but in which that person ends with an *s* preceded by a consonant, the pronoun *je* is not placed after the verb. In such case another construction must be given to the sentence :—

Est-ce-que je cours ?	*Do I run ? literally, Is it that I run ?*
Est-ce-que je dors ?	*Do I sleep ?*
Est-ce-que je comprends ?	*Do I understand ?*

(6.) The same construction is admissible, though not desirable, with all the persons and tenses which may be used interrogatively.

LESSONS IN GREEK.—No. VI.

By JOHN R. BEARD, D.D.

THERE are in the Greek second declension two terminations, that in ος corresponding with the Latin *us*, and that in ον corresponding with the Latin *um*. Of the nouns which terminate in ος the greater number are of the masculine gender, some are also feminine ; nouns in ον are of the neuter gender, except diminutive female names, as ἡ Γλυκερίον, *Glycerium*.

The following table presents

The Case-endings of the Second Declension.

	Singular.		*Plural.*		*Dual.*
N.	ος	ον	οι	ᾰ	ω
G.	ου		ων		οιν
D.	ῳ		οις		οιν
A.	ον		ους	ᾰ	ω
V.	ε (ος)	ον	οι	α	ω

Before passing on, let the learner turn back and compare these terminations with those that are given in connexion with the article : then he will readily commit these to memory :

Paradigms or Examples of the Second Declension.

	Word.	*Island.*	*God.*	*Messenger.*	*Fig.*
S. N.	λογος (m.)	νησος (f.)	θεος (m.)	αγγελος (m.)	συκον (n.)
G.	λογου	νησου	θεου	αγγελου	συκου
D.	λογῳ	νησῳ	θεῳ	αγγελῳ	συκῳ
A.	λογον	νησον	θεον	αγγελον	συκον
V.	λογε	νησε	θεος	αγγελε	συκον
P. N.	λογοι	νησοι	θεοι	αγγελοι	συκα
G.	λογων	νησων	θεων	αγγελων	συκων
D.	λογοις	νησοις	θεοις	αγγελοις	συκοις
A.	λογους	νησους	θεους	αγγελους	συκα
V.	λογοι	νησοι	θεοι	αγγελοι	συκα
D. N.A.V.	λογω	νησω	θεω	αγγελω	συκω
G.D.	λογοιν	νησοιν	θεοιν	αγγελοιν	συκοιν

* We may say, however, suis-je ? *am I?* ai-je ? *have I?* fais-je ? *do I make?* dois-je ? *should I? ought I?* vois-je ? *do I see ?* vais-je ? *do I go?* entends-je ? *do I hear ?*

The vocative of the words in ος commonly ends in ε, but often, especially in adjectives and participles, in ε ; as ω φιλε, also ω φιλος ; but θεος always has ος.

As in Latin nouns in *um*, the Greek neuters in ον have the same ending, namely ον in the nominative, the accusative, and the vocative ; and this, too, in the plural as well as the singular, viz., in α.

The models just given are followed by adjectives in ος (m.), ον (n.), as αγαθος (αγαθη like the first declension) αγαθον ; as appears in these

Models of Adjectives and Nouns of the Second Declension.

	A good word.	*A good child.*
S. N.	αγαθος λογος	αγαθον τεκνον
G.	αγαθου λογου	αγαθου τεκνου
D.	αγαθῳ λογῳ	αγαθῳ τεκνῳ
A.	αγαθον λογον	αγαθον τεκνον
V.	αγαθε λογε	αγαθον τεκνον
P. N.	αγαθοι λογοι	αγαθα τεκνα
G.	αγαθων λογων	αγαθων τεκνων
D.	αγαθοις λογοις	αγαθοις τεκνοις
A.	αγαθους λογους	αγαθα τεκνα
V.	αγαθοι λογοι	αγαθα τεκνα
D. N.A.V.	αγαθω λογω	αγαθω τεκνω
G.D.	αγαθοιν λογοιν	αγαθοιν τεκνοιν

The foregoing relates to adjectives of three terminations. Adjectives of two terminations are also declined in the same manner, namely such as end in ος, m. and f. and ον, n. as παγκαλος, παγκαλον, *very beautiful* ; e. g., ὁ παγκαλος λογος, *the very beautiful speech* ; το παγκαλον τεκνον, *the very beautiful child*.

For the sake of practice I here subjoin an example of an adjective of three terminations, and one of two terminations, advising you to learn them horizontally as well as perpendicularly.

Adjectives of three and two Terminations, like the first and Second Declensions.

S. N.	σοφος, η, ον, *wise*	κοσμιος, ον, *orderly*
G.	σοφου, ης, ου	κοσμιου, ου
D.	σοφῳ, ῃ, ῳ	κοσμιῳ, ῳ
A.	σοφον, ην, ον	κοσμιον, ον
V.	σοφε, η, ον	κοσμιε, ον
P. N.	σοφοι, αι, α	κοσμιοι, α
G.	σοφων, ων, ων	κοσμιων, ων
D.	σοφοις, αις, οις	κοσμιοις, οις
A.	σοφους, ας, α	κοσμιους, α
V.	σοφοι, αι, α	κοσμιοι, α
D. N.A.V.	σοφω, α, ω	κοσμιω, ω
G.D.	σοφοιν, αιν, οιν	κοσμιοιν, οιν

Before you perform the ensuing exercise, you must learn that Greek nouns in the neuter plural require their verb to be in the singular number.

VOCABULARY.

Ἀδελφος, ου, ὁ, a brother.
Ἀνθρωπος, ου, ὁ, a man.
Διδασκαλος, ου, ὁ, a teacher.
Δουλος, ου, ὁ, a slave.
Ἑταιρος, ου, ὁ, a companion, friend.
Κινδύνος, ου, ὁ, danger.
Οινος, ου, ὁ, wine.
ὁ Θεος, God, the true God.
Εργον, ου, το, a work.
Αγαθος, η, ον, good.
Εσθλος, η, ον, excellent.
Κακος, η, ον, bad, τα κακα, mala, evils.
Καλος, η, ον, fair, beautiful.
Πιστος, η, ον, faithful.
Πολλοι, αι, α, many, numerous.
Φιλος, η, ον, loving, friendly.
Χαλεπος, η, ον, hard, difficult.
Εχθρος, α, ον, hostile, hateful, ὁ εχθρος, the enemy.
Μετεχω (with gen.), I partake, share.
Μισγω (*Lat.* misceo, *Eng.* mix), I mix (acc. and dat.)
Παρεχω, I give, bestow.
Φροντιζω (gen.) I care for.
Χαιρω (dat.), I rejoice at.
Αλλ' (αλλα), but.

EXERCISES :—GREEK-ENGLISH.

Διωκε καλα εργα, ω φιλε νεανια. Πειθου τοις του διδασκαλου λογοις. Παὰ εσθλων εσθλα μανθανεις. Πιστος ἑταιρος των αγαθων και των κακων μετεχει. Οι Θεοι των ανθρωπων φροντιζουσιν. Οι ανθρωποι τους Θεους θεραπευουσιν. Πολλοις εργοις

ἑπεται κινδυνος. Μισγεται εσθλα κακοις. Ὁ κακος τοις θεοις και τοις ανθρωποις εχθρος εστιν. Οἱ ανθρωποι τοις εσθλοις χαιρουσιν. Παρεχε, ω θεος, τοις φιλοις ευτυχιαν. Φερε, ω δουλε, τον οινον τῳ νεανιᾳ. Ὁ οινος ου λυει αλλα τικτει τας μεριμνας. Χαλεπῳ εργῳ δοξα ἑπεται.

ENGLISH-GREEK.

Good men obey God. Bad men obey not God. O good youths, obey your (the) teacher; bad men are hostile to the good (the bad—the good). Abstain from bad men. Good men take care of their (the) children. Trust not the word of a liar, O dear boy. Danger follows many words. Good youths honour their (the) teachers.

Remarks.—The Greeks are fond of such an arrangement of words as is found in the phrase *τοις του διδασκαλου λογοις*, given above. Literally and in the Greek order, the words run—the of the teacher words; that is, *the words of the teacher*. Imitate this construction. In general, the Greek order of words approaches more nearly to the English than does the Latin. The sense, however, logically considered, prevails over other considerations in the Greek collocation of words. The chief place of emphasis is the commencement of a sentence, the next is the end. Not by any mere rule can the tyro acquire the tact of placing the Greek words in their idiomatic order. Of course, he will study to do his best, and from attention to the sentences given in the exercises, and making them, as far as possible, models, he may learn much and make an approach to correctness; after all, nothing but a long and careful study of the writings of the classics themselves can give him complete skill. The student need not, however, be very anxious about arrangement in these exercises, the principal object of which is to help him to gain a facility in reading the language.

VOCABULARY.

Αργῦρος, ου, ὁ, silver.
Χρυσος, ου, ὁ, gold.
Βιος, ου, ὁ, life.
Θανατος, ου ὁ, death.
Θυμος, ου, ὁ, mind, courage, spirit.
Μοχλος, ου, ὁ, a bolt.
Νοσος, ου, ἡ, sickness.
Πονος, ου, ὁ, labour.
Χρονος, ου, ὁ, time.
Μετρον, ου, το, a measure.
Αξιος, α, ον, (gen.) worthy.
Θειος, ᾱ, ον, divine, το Θειον, the Divinity.
Μυριος, ᾱ, ον, innumerable.
Νεος, α, ον, young; ὁ νεος, a young man.
Βουλη, ης, ἡ, a counsel.
Διχοστασια, ας, ἡ, division.
Σιγη, ης, ἡ. silence.
Θυρα, ας, η, a door.
Απολυω, (genit. of the thing), I free from.
Ευφραινω, I make joyful.
Κλειω, I shut.
Ουχ (ουχ comes before an aspirated vowel, instead of ουκ and ου), not.

EXERCISES:—GREEK-ENGLISH.

Το καλον εστι μετρον του βιου, ουχ ὁ χρονος. Ὁ θανατος τους ανθρωπους απολυει πονων και κακων. Ὁ οινος ευφραινει τους των ανθρωπων θυμους. Συν μυριοις πονοις τα καλα γιγνεται. Το θειον τους κακους αγει προς την δικην. Πιστος φιλος χρυσου και αργυρου αξιος εστιν εν χαλεπῃ διχοστασιᾳ. Πολλαι νοσοι εν ανθρωποις εισιν. Βουλη εις αγαθον αγει. Σιγη νεῳ τιμην φερει. Ἡ θυρα μοχλοις κλειεται. Ἡ τεχνη τους ανθρωπους τρεφει. Ω φιλοι μαθηται, της σοφιας και της αρετης ορεγεσθε.

ENGLISH-GREEK.

By death (dat.) men are set free from labours. Many labours follow life. The wisdom of the Divinity leads good men to happiness. Follow the words of the judge. The words of the youth are bad. The lyre dissipates (λυω) the cares of the mind. Silence becomes a boy. Art nourishes good men. The bolt shuts the door.

Instead of ος and ον some nouns and adjectives have the terminations ως (m. and f.) and ων (n.) the ω is retained through all the cases; the vocative is the same as the nominative. Though this form occurs in Ionic writers, as Herodotus, yet it bears the name of

The Attic Declension.

	the people	*the rope.*	*the chamber.*	*merciful.*
S. N.	ὁ λεως	ὁ καλως	το ανωγεων	ὁ, ἡ ἱλεως, το ἱλεων
G.	λεω	καλω	ανωγεω	ἱλεω
D.	λεῳ	καλῳ	ανωγεῳ	ἱλεῳ
A.	λεων	καλων	ανωγεων	ἱλεων
V.	λεως	καλως	ανωγεων	ἱλεως ἱλεων
P. N.	λεῳ	καλῳ	ανωγεω	οἱ, αἱ ἱλεω τα ἱλεω
G.	λεῶν	καλῶν	ανωγεων	ἱλεων
D.	λεῷς	καλῳς	ανωγεῳς	ἱλεῳς
A.	λεως	καλως	ανωγεω	ἱλεως ἱλεω
V.	λεῳ	καλῳ	ανωγεω	ἱλεῳ ἱλεω
D. N.A.V.	λεω	καλω	ανωγεῶ	ἱλεω
G.D.	λεῷν	καλῳν	ανωγεῳν	ἱλεῳν.

Some words of both the masculine and feminine gender often drop the *ν* of the accusative case, as ὁ *λαγως, the hare,* τον *λαγω*; ὁ Αθως, *Mount Athos,* τον Αθω; ἡ ἑως, *the dawn,* always has *την ἑω*.

VOCABULARY.

Ανδρογεως, ω, ὁ, Andrógeus (a proper name).
Μενελεως, ω, ὁ, Meneláus (a proper name).
Μινως, ω, ὁ, Minos (a proper name).
Νεως, ω, ὁ, a temple.
Ταως, ω, ὁ, a peacock.
Αγηρως, ων, not growing old, deathless (and not γηρως, old age).
Ἡρα, ας, ἡ, Hera (called by the Latins, Juno).
Αετος, ου, ὁ, an eagle.
Επαινος, ου, ὁ, praise.
Ὑιος, ου, ὁ, a son.
Σαμιος, ου, ὁ, a Samian.
Πτερον, ου, το, a feather, wing.
Αιχμαλωτος, ου, ὁ, a prisoner.
Ανδρειος, α ον, manly, brave.
Πλειστος, η, ον, most, very many.
Ραδιος, α, ον, easy.
Απαγω, I lead away.
Βαινω, I walk, go.
Ενεδρευω, I lie in wait, capture.
Ευχομαι, I pray (with dat.)
Θηρευω, I hunt, catch.
Θηρευτης, ου, ὁ, a huntsman.
Κτιζω, I found, build.
Λαμβανω, I take.
Σεβομαι, I venerate, worship.
Ωσπερ, as.

EXERCISES.—GREEK-ENGLISH.

Τοις Θεοις νεῳ κτιζονται. Ου ῥαδιον εστιν επι καλων βαινειν. Διωκομεν τους λαγως. Ανδρογεως ην ὁ Μινω ὑιος. Οἱ λαγῳ θηρευονται ὑπο των θηρευτων. Ευχου τῳ ἱλεῳ Θεῳ. Οἱ αετοι τους λαγως ενεδρευουσιν. Σεβεσθε τους ἱλεως θεους. Οἱ ανδρειοι αγηρων επαινον λαμβανουσιν. Ευχου τον Θεον ἱλεων εχειν. Οἱ θεοι τοις αγαθοις ἱλεως εισιν. Αἱ ἡδοναι απαγουσι τον πλειστον λεῶν ωσπερ αιχμαλωτον. Οἱ Σαμιοι Ἡρᾳ καλους ταως τρεφουσιν. Τῳ ταῳ καλα πτερα εστιν.

ENGLISH-GREEK.

You build temples to the gods. Temples are built to the gods. I build a temple to God. They walk on ropes. We hunt hares. Hares are hunted. The Samians worship beautiful peacocks. They worship the merciful God. God is merciful (gracious) to good men. Huntsmen hunt hares. Menelaus obtains deathless praise.

VOCABULARY.

Γαμετη, ης, ἡ, a wife.
Βαβυλωνια, ας, ἡ, Babylon.
Ἑλενη, ης, ἡ, Helen.
Στηλη, ης, ἡ, a pillar.
Ποιητης, ου, ὁ, a poet.
Θηριον, ου, το, a wild beast.
Βασιλειος, α, ον, kingly, royal, *τα βασιλεια*, the kingly buildings, *i. e.* the palace.
Πλοος (πλοῦς), ου, ὁ, a voyage.
Δειλος, η, ον, cowardly, timid.
Ανοητος, ον, senseless.
Ἱερος, α, ον (g.) sacred, holy.
Επικινδῦνος, ον, dangerous.
Ῥοδοδακτυλος, ον, rosy-fingered
Απαγορευω, I name.
Αρεσκω, I please.
Εκφερω, I bring out, produce.
Επι (d.) on account of.

EXERCISES.—GREEK-ENGLISH.

Οἱ ταῳ Ἡρας ἱεροι ησαν. Θαυμαζομεν Μενελεων επι τῃ αρετῃ. Οἱ ποιηται την Ἑω ῥοδοδακτυλον απαγορευουσιν. Ἀληθεια πολλακις ουκ αρεσκει τῳ λεῳ. Ἑλενη ην ἡ Μενελεω γαμετη. Ἡ βαβυλωνια εκφερει πολλους ταως. Εν τοις των θεων νεῳς πολλαι στηλαι εισιν. Οἱ λαγῳ δειλα θηρια εισιν. Ὁ περι τον Αθω πλοῦς ην κινδυνος. Τα βασιλεια καλα ανωγεω εχει.

ENGLISH-GREEK.

Menelaus is admired on account of his bravery. We admire the rosy-fingered dawn. Many peacocks are produced in Babylon. In the temple of Hera is a beautiful peacock. Huntsmen catch peacocks. Peacocks are caught by huntsmen. Good citizens avoid the senseless people.

IRELAND.

BOUNDARIES.

NORTH : N. Atlantic Ocean.
SOUTH : N. Atlantic Ocean.
EAST : Irish Sea, &c.
WEST : N. Atlantic Ocean

DIVISIONS.

PROVINCE OF ULSTER.

Counties.	*Towns.*
Donegal,	LIFFORD.
Londonderry,	LONDONDERRY.
Antrim,	BELFAST.
Tyrone,	Strabane. Omagh.
Down,	Newry. Downpatrick.
Fermanagh,	Enniskillen
Cavan,	CAVAN.
Monaghan,	MONAGHAN.
Armagh,	ARMAGH.

PROVINCE OF CONNAUGHT.

Leitrim,	CARRICK-ON-SHANNON.
Roscommon,	ROSCOMMON.
Sligo,	SLIGO.
Mayo,	CASTLEBAR.
Galway,	GALWAY.

PROVINCE OF LEINSTER.

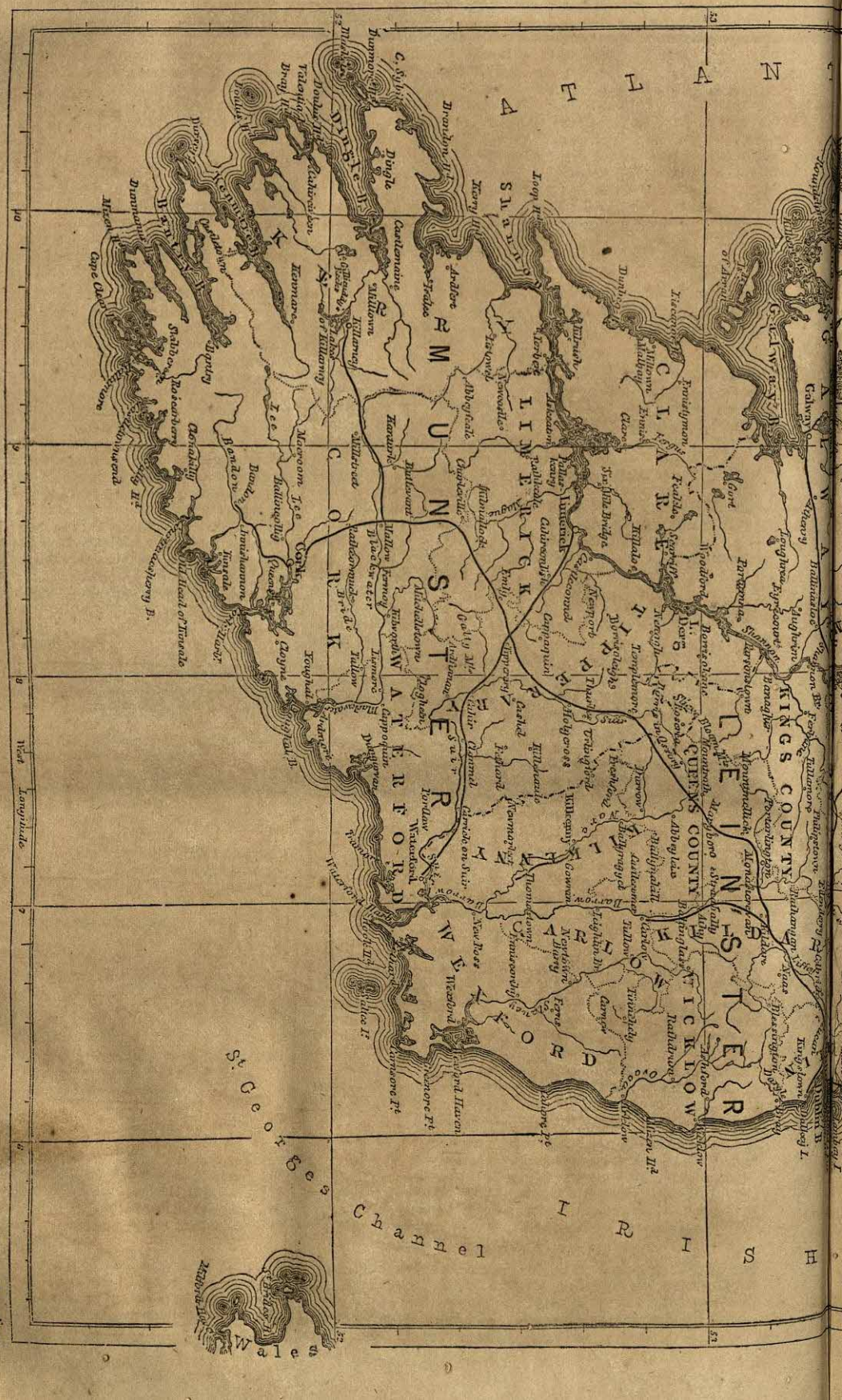
Longford,	LONGFORD.
West Meath,	Athlone. Mullingar.
East Meath,	Navan. Trim.
Louth,	Drogheda. Dundalk.
King's County,	Tullamore. Phillipstown.
Queen's County,	Maryborough.
Kildare,	Athy. Naas.
Dublin,	DUBLIN.
Wicklow,	Arklow. Wicklow.
Kilkenny,	KILKENNY.
Carlow,	CARLOW.
Wexford,	WEXFORD.

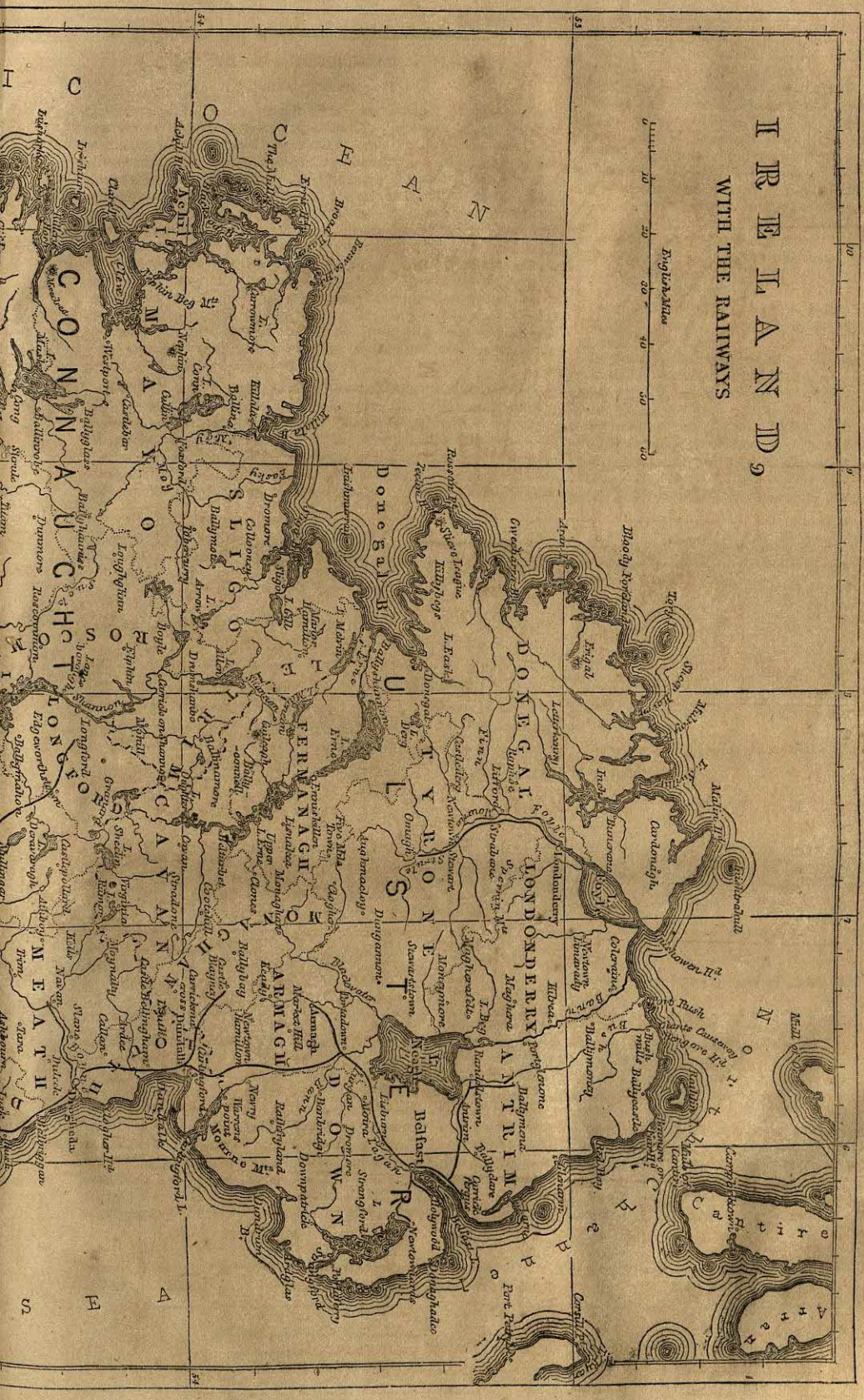
PROVINCE OF MUNSTER.

Clare,	ENNIS.
Limerick,	LIMERICK.
Tipperary,	CLONMEL.
Kerry,	TRALEE.
Cork,	CORK.
Waterford,	WATERFORD.

ISLANDS.

Rathlin,	North Channel.
Inishtrahull,	Near Main Head.
Inch,	Lough Swilly.
Tory,	N. W. of Donegal.
Aran,	W. of Donegal.
Inishmurray,	Donegal Bay.
Eagle Group,	W. of Mullet





IRELAND.

ISLANDS.

Achil,	W. of Mayo.
Clare,	Clew Bay.
Inishturk,	S. of Clare Is.
Inishark,	S. of Inishturk.
Arran Group,	Galway Bay.
Blaskets,	S.W. of Dunmore Head.
Valentia,	Dingle Bay.
Cape Clear,	S. of Cork.
Saltee Group,	S. of Wexford.
Dalkey,	Dublin Bay.
Ireland's Eye,	Near Howth Head.
Lambay,	N. of Ireland's Eye

PENINSULAS.

The Mullet, Mayo.
Connemara, Galway.

CAPES.

Malin Head, Donegal.
Inishowen Head, Donegal.
Bengore Head, Giant's Causeway.
Fair Head, Antrim.
Clogher Head, Louth.
Howth Head, Dublin.
Cahore Point, Wicklow.
Carnsore Point, Wexford.
Hook Head. Wexford.
Old Head of Kinsale, Cork.
Gally Head, Cork.
Cape Clear, C. Clear Is.
Mizzen Head, Cork.
Bray Head, Valentia Is.
Dunmore Head, Dingle Bay.
Cape Sybil, Kerry.
Brandon Head, Kerry.
Kerry Head, Kerry.
Loop Head, Clare.
Slyne Head, Galway.
Achill Head, Achill I.
Erris Head, the Mullet.
Benvee Head, Mayo.
Teelin Head, Donegal.
Rossan Point, Donegal.
Bloody Foreland, Donegal.

BAYS AND LOUGHS.

Lough Foyle, Londonderry.
Belfast Lough, Antrim.
Lough Neagh, Antrim.
Lough Strangford, Down.
Dundrum Bay, Down.
Lough Carlingford, Down.
Dundalk Bay, Louth.
Dublin Bay, Dublin.
Wexford Haven, Wexford.
Youghhal Bay, Cork.
Bantry Bay, Cork.
Kenmare Bay, Kerry.
Dingle Bay, Kerry.
Shannon Mouth, Clare.
Galway Bay, Galway.
Clew Bay, Mayo.
Blacksod Bay, the Mullet.
Killala Bay, Mayo.
Donegal Bay, Donegal.
Lough Swilly, Donegal.

LESSONS IN BOOKKEEPING.—No. VI.

(*Continued from page* 294.)

In keeping Books by Double Entry, the various accounts which are opened in the *Ledger*, correspond, of course, exactly to the nature of the transactions which occur in the business. In general, however, their object is threefold, as formerly stated in our third Lesson, viz.: The *Property* Accounts, the *Personal* Accounts, and the *Profit and Loss* Accounts. In the same Lesson rules were given for finding the *Debtor* and *Creditor*, and making the proper entry in every variety of transaction. As a general rule in opening these accounts in the *Ledger*, it is both usual and proper *first* to open those accounts which are called *Property* Accounts, such as *Stock Account*, which represents the *capital* employed in a Merchant's business, and *Private Account*, which represents the Merchant himself, and contains all the moneys abstracted from the business on his own *personal account*, and which, in the old Italian system, used to be entitled *Household Expenses*.

The *Property Accounts* which follow these, are generally *Cash Account* and *Petty Cash Account*, the names of which sufficiently indicate their nature, and the transactions which must be ranged under these heads. Then, follow the Accounts of *Bills Receivable* and *Bills Payable*; and here it may be useful to observe that, in order to prevent mistakes, these should be put in different folios of the Ledger. Next, may follow *Goods Accounts* of various kinds, such as *Cotton Account*, *Three per Cents. Account*, &c., or the account of any other article in which the Merchant happens to deal.

After the *Property Accounts* are opened in the *Ledger*, then follow the *Personal Accounts*, or the names of those persons with whom a Merchant deals, whether in buying or selling Goods, Lending or Borrowing Money, and acting as Agent or otherwise. Lastly, are opened the *Profit and Loss* Accounts, or those in which the *Loss* or *Gain* by certain transactions are at once rendered manifest from their nature; such as *Interest* (including *Discount*), *Charges*, *Commission*, &c. Besides these, is also opened the general *Profit and Loss Account* itself, as a receptacle for a proper statement of all the *Losses* and *Gains* in business not classified under particular heads, and as a proper account for exhibiting at the end of any given period the actual state of a Merchant's business in respect of his real *Gains* and *Losses* on all the other accounts which have been opened in the *Ledger*.

In posting the entries from the *Journal* into the *Ledger*, it is plain that whatever the Journal says in any entry, the Ledger must say the *same thing*, sometimes in the same form, sometimes in a different form; but in Double Entry, this *same thing* must always be said *twice*, namely, *once* on the *Dr. side* of the *Debtor's Account*, and *once* on the *Cr. side* of the *Creditor's Account*. Let us illustrate this principle by some examples: *First*, suppose that the following entry occurred in a Merchant's *Journal*, and in the following form.—

Date.	Fol.	March, 1863.	Dr.			Cr.		
3		Richard Watson, Dr.	100	6	8			
		To Cotton Account				100	6	8

This Entry, single in the *Journal*, must be entered *twice* in the Ledger, viz. *once* on the Dr. side of Richard Watson's Account, and *once* on the Cr. side of Cotton Account; here, the word Dr. clearly points out the *Debtor*, and the word To points out the *Creditor*. These entries in the Ledger would be as follows:—

Dr. RICHARD WATSON. Cr.

1863. March	3	To Cotton Account ...	100	6	8						

Dr. COTTON ACCOUNT. Cr.

						1863. March	3	By Richard Watson ...	100	6	8

These accounts, although brought together here for the sake of illustration, may be in very different parts or folios of the *Ledger*. Here also it may be remarked that as To is the word which points out the *Creditor*, so By is the word which points out the *Debtor*. The column alongside the pounds column (which is always denoted by a double stroke) is the column for inserting the number of the *page of the Journal* from which any entry is taken; and this number should always be inserted in its proper column, at the same time that the money is inserted in the money columns. As to the importance of inserting the *date of the entry* in its proper column at the same time, this is *so obvious to every one*, that we might have spared ourselves the trouble of making the remark. In the *Journal*, you will see a column placed alongside the *Date column*; this is the column for inserting the *folio of the Ledger* where the accounts occur; and it should be inserted as soon as the entry is made in the *Ledger*; thus there would be one folio figure placed in the Journal, against the name of the *Debtor* Richard Watson, and another folio figure placed against the name of *Creditor* Cotton Account.

Second, suppose that an entry similar to the following occurred in a Merchant's *Journal*?—

(Page 5.)

Date.	Fol.	March, 1863.	Dr.			Cr.		
31	3	Cash Account, Dr.	273	17	9			
		To Sundries, as per C.B., fol. 1.				100	6	8
17	5	To Richard Watson				75	3	4
25	6	To Alexander Brown				98	7	9
31	7	To Thomas Smith						

This single entry in the *Journal* will occasion *four separate entries* in the *Ledger*; and yet it will only be an example of *Double Entry*; for the *first* entry in the *Ledger* will be to *Debit Cash* for the whole amount of the sums in this entry, in the following manner:—

Fol. (3)	Dr.	CASH ACCOUNT.					Cr.				Fol. (3).
1863. March	31	To Sundries ...	5	273	17	9					

The *second* entry in the Ledger will be *three-fold*, that is, it will be to *Credit each of the accounts* for its respective part of the whole amount of the sums in this entry, in the following manner:—

Fol. (5).	Dr.	RICHARD WATSON.					Cr.				Fol. (5).
						March	17	By Cash	5	100	6	8

(6).	Dr.	ALEXANDER BROWN.					Cr.				(6)
						March	25	By Cash	5	75	3	4

(7).	Dr.	THOMAS SMITH.					Cr.				(7).
						March	31	By Cash	5	98	7	9

Thus you see that the sum of £273 17s. 9d., received in Cash from different parties in March, is *entered once* on the *Dr. side of Cash Account*, and that the same sum is *entered once* on the *Cr. side* of the *different accounts* to which they belong; but, that it is apportioned out into the respective sums received from each of the parties in whose account they are entered.

Thus you will see also that these *three* latter entries on the Cr. side of the Ledger account, are but an equivalent to the *one* entry on the Dr. side of the same.

Thirdly, we shall only suppose another example of a Journal entry to be posted into the Ledger, as follows:—

(Page 6).

Date.	Fol.	April, 1863.	Dr.			Cr.		
21		Sundries, Dr.						
	3	To Cash Account, as per C.B., fol. 1				429	16	6
10	8	Hugh Williams	250	0	0			
21	9	John Tillotson	179	16	6			

This single Entry in the Journal will occasion *three separate entries* in the *Ledger*, as follows; but it is plain that in this case the *two Debit* entries in the accounts of *Hugh Williams* and *John Tillotson*, will only be an equivalent for the *single Credit* entry in the *Cash Account*; and thus it is still an example of *Double Entry*:—

Fol. (3).	Dr.	CASH ACCOUNT.					Cr.				Fol. (3).
						1863. April	21	By Sundries	6	429	16	6

(8).	Dr.	HUGH WILLIAMS.					Cr.				(8).
April	10	To Cash	6	250	0	0					

(9).	Dr.	JOHN TILLOTSON.					Cr.				(9).
April	21	To Cash	6	179	16	6					

Here the form of the entry in the *Journal*, when transferred to the *Ledger*, is considerably different; yet both forms have the same meaning. For whether we say *Sundries Dr. to Cash Account*, as in the *Journal;* or *Cash Account Cr. By Sundries* as in the *Ledger;* both of these forms of expression have precisely the same meaning; the former is peculiar to the *Journal*, the latter is peculiar to the *Ledger*. Of course, the student is supposed to know that *Sundries* is used instead of the words *Several Accounts*, and has the same meaning. It is a very convenient business word; but he would be a very stupid learner who should expect to see a *Sundries Account* in the *Ledger*, as there it would have no meaning. Instead of saying in the *Cash Account* as above, *By Sundries*, the Bookkeeper might say *By Hugh Williams* and *By John Tillotson*; but this would occupy two lines instead of one, and would not be one whit clearer in meaning. Besides, if in one entry in the *Journal* there were *twenty Drs. to Cash* instead of *two*, as in the preceding instance, you will see what a vast saving of writing, and of liability to error, is effected by using the single phrase—*By Sundries*. We might proceed to give other examples; but we must not anticipate the short system which we shall begin to lay before our readers in the next lesson. Suffice it to say that, as a general rule, for *posting*, or transferring entries from the *Journal* to the *Ledger*, you have only to *Debit the Debtors for the sums that they owe; and Credit the Creditors for the sums owing to them*; and remember, that to *Debit a Debtor*, is to enter on the *Dr. side* of his account in the *Ledger*, the *name of his Creditor*, with the word To before it, and the *sum that the Debtor owes*; and to *Credit a Creditor*, is to enter on the *Cr. side* of his account in the *Ledger*, the *name of his Debtor*, with the word By before it, *and the sum that is owing to him, the Creditor.*

It has been already remarked that by the adoption of *Dr. and Cr. columns* in the *Journal*, (which forms the peculiarity of Jones's System of Book-keeping), a constant Check is kept up on the accuracy of the entries, not only in that Book, but also of the corresponding entries in the *Ledger*; inasmuch as the total sums in the *Dr. and Cr. columns* of both books for any given period ought perfectly to agree; that is, not only ought the sum of the Dr. columns in the *Journal* to agree with the sum of the Cr. columns for any given period; but the sum of the Dr. columns of the *Ledger* ought to agree with the sum of the Dr. columns of the Journal, and the sum of the Cr. columns of the *Ledger* ought to agree with the sum of the Cr. columns of the *Journal*, and that for the same given period. In addition to this, (which constitutes part of our improvement of the said system), the plan of check on the accuracy of all the books will be rendered complete, IF, to the amount of the *net sums* of the *Day Book* entries for any given period, be added the amount of the sums entered in the *Bills Receivable Book*, in the *Bills Payable Book*, in both sides of the *Cash Book*, and in any other book from which entries are taken into the *Journal*; for then, the *sum* of the whole amounts or totals of the sums entered in *these books*, ought exactly to agree with the sum of the *Dr. or Cr.* columns of the *Journal* or of the *Ledger*, for the period in question. Such a mode of check will at all events furnish a clear and satisfactory proof that no error with regard to the entering of sums has been committed, either in Journalising the *subsidiary books*, or in *posting* the entries into the *Ledger*.

LESSONS IN GERMAN PRONUNCIATION.—No. XI.

Die Katze, die alte und die junge Maus.
Dee kåt'-tsai, dee ål'-tai öönt dee jööng'-ai mouse.

Die Katze.
Dee kåt'-tsai.

Du allerliebstes kleines Thier,
Doo ål'-ler-leep'-stes kli'-nes teer,

Komm doch ein wenig her zu mir,
Kom doch ine vey'-nich hair tsoo meer,

Ich bin dir gar zu gut; komm daß ich dich nur küsse.
ich bin deer gåhr tsoo goo't; kom dåss ich dich noor küss'-sai.

Die alte Maus.
Dee ål'-tai mouse.

Ich rathe dir, Kind, gehe nicht!
ich råh'-tai deer, kint, ghey'-hai nicht!

Die Katze.
Dee kåt'-tsai.

So komm doch; siehe, diese Nüsse
Zo kom doch; zee'-hai, dee'-zai nüss'-sai

Sind alle dein, wenn ich dich einmal küsse.
Zint ål'-lai dine, ven ich dich ine'-måhl küss'-sai.

Die junge Maus.
Dee yööng'-ai mouse.

O Mutter, höre doch, wie sie so freundlich spricht.
Oh mööt'-ter, hö'-rai doch, vee zee zo froint'-lich sprícht.

Ich geh.
ich ghey.

Die alte Maus.
Dee ål'-tai mouse.

Kind, gehe nicht!
Kint, ghey'-hai nicht!

Die Katze.
Dee kåt'-tsai.

Auch dieses Zuckerbrod und andre schöne Sachen.
ouch dee'-zess tsöök'-ker-brote öönt ån'-drai shö'-nai zách'-chen.

Geb' ich dir, wenn du kommst.
gaip' ich deer, ven doo komst.

Die junge Maus.
Dee yööng'-ai mouse.

Was soll ich machen?
Våss zoll ich mách'-chen?

O Mutter, laß mich gehn!
Oh mööt'-ter, låss mich ghey'n!

Die alte Maus.
Dee ål'-tai mouse.

Kind, folg' mir, gehe nicht!
Kint, folch' meer, gai'-hai nicht!

Die junge Maus.
Dee yööng'-ai mouse.

Was wird sie mir denn thun? welch ehrliches Gesicht!
Våss virrt zee meer den toon? velch ey'r'-lich-chess gai-zícht'

Die Katze.
Dee kåt'-tsai.

Komm, kleines Närrchen, komm!
Kom, kli'-ness nerr'-chen, kom!

Die junge Maus.
Dee yööng'-ai mouse.

Ach, Mutter, hilf! O weh!
åch, mööt'-ter, hilf! Oh vey!

Sie würgt mich! Ach, die Garstige!
Zee vürcht mich! åch, dee gár'-stig-ai!

Die alte Maus.
Dee ål'-tai mouse.

Nun ist's zu spät, nun dich das Unglück schon betroffen.
Noon ists tsoo spate, noon dich dåss öön'-glück shone bai-trof'-fen.

Wer sich nicht rathen läßt, hat Hülfe nicht zu hoffen.
Vair zich nicht råh'-ten lest, håht hül'-fai nicht tsoo hof'-fen.

VOCABULARY.

Katze, *f.* cat	ehrlich, honest, -ly
Maus, *f.* mouse	Ehre, *f.* honour
gut sein, to be fond of	Gesicht, *n.* face
gar, entirely	Narr, *m.* fool
zu, too	helfen, to help
rathen, to advise	würgen, to choke, throttle
dir, *Dat.* to thee	garstig, ugly, horrid
komm doch, do come	spät, late
doch, *an explet. like* do *in* do come	Glück, *n.* fortune, luck
	schon, already
dich, thee	betreffen, to befall
dein, thine	treffen to hit, meet
Brod, *n.* bread	Hülfe, *f.* help
Sache, *f.* thing	

LESSONS IN GERMAN.—No. LXIV.

§ 73. Auxiliaries of the second class.

(1) The second Class of auxiliaries embraces the following:

Ich mag, I am allowed; (*may;*)	Ich darf, I am permitted; I dare.
Ich will, I will; (*purpose;*)	Ich muß, I am obliged; (must)
Ich soll, I am obliged; (*shall;*)	Ich lasse, I let.
Ich kann, I am able; (*can;*)	

(2) These verbs are, for the most part, very irregular in conjugation, and serve simply the purpose of modifying other verbs with the ideas of *liberty*, *possibility*, or *necessity*, and the verbs thus modified are required to be in the infinitive mood; thus er mag lachen, he *may* (has permission to) laugh; ich kann schreiben, I *can* (am able to) write; where lachen and schreiben are both in the infinitive, governed respectively by mag and kann.

(3) In the perfect and pluperfect tenses, however, the past participle of these verbs is used only when the principal verb is not expressed. Its place is supplied, in such cases, by the infinitive, the translation of course being the same in either case, as:

Ich habe ihn sehen können (instead of gekonnt)
I have been able to see him.

Er hat warten müssen (instead of gemußt);
he was obliged to wait.

Man hätte über ihn lachen mögen (instead of gemocht);
one might have laughed at him.

Er hat dem Befehle nicht gehorchen wollen (instead of gewollt);
he has not been willing to obey the command.

Ich habe sein Geheimniß wissen dürfen (instead of gedurft);
I have been allowed to know his secret.

Sie hätten es thun sollen (instead of gesollt);
she ought to have done it.

Sie haben ihn gehen lassen (instead of gelassen);
they have suffered him to go.

For a full display of the forms of the verbs and for further remarks on their uses, see the Section on the *Mixed* Conjugation § 83.

The verb lassen (*to let*) does not belong to the Mixed conjugation. This verb is used either in *permitting or commanding:* as, ich habe ihn gehen lassen, I have *allowed* him to go; ich habe ihn kommen lassen, I have *ordered* him to come; which two meanings are near akin. When used with a reciprocal pronoun, it has its equivalent in such phrases as, *is to, ought to, may;* as, das läßt sich nicht thun, that is not to be done; literally, *does not allow itself* to be done. The infinitive active after lassen, must often be translated passively.

§ 74. Conjugation of Verbs.

(1) There are two conjugations of verbs: the *Old* and the *New*. The difference between them lies mainly in the mode of forming the Imperfect Tense and the Perfect Participle.

(2) The verbs of the Old form are commonly denominated "*Irregular Verbs.*" But, as nearly all the primitive verbs in the language are conjugated in this way, and few, except the derivative verbs (now the larger class), ever assume the other form, it is the custom of the best German grammarians to adopt the classification which we have given. This will occasion no confusion or inconvenience to those who prefer the common classification: since it is only necessary to remember that the *things* are the same, though the *names* have been changed.

(3) In order to afford the ready means of comparing the *terminational* differences between the Old and New forms of conjugation, we subjoin the following tabular view of the *simple tenses and participles*, in which alone differences of this kind can exist.

(4) In the compound tenses, the *auxiliary* alone being subjected to terminational variation, the mode of inflecting these tenses becomes of course perfectly uniform in all classes of verbs. Hence to secure a complete acquaintance with the forms of the compound tenses, little more is necessary than a bare inspection of the paradigms.

§ 75. TERMINATIONS OF THE SIMPLE TENSES.

Old Conjugation. *New Conjugation*

	INDICATIVE.			SUBJUNC.			INDICATIVE.			SUBJUNCTIVE		
	PERSONS.	ROOT.	TENSE-SIGN.	PERS. ENDING.	ROOT.	TENSE-SIGN.	PERS. ENDING.	PERSONS.	ROOT.	TENSE-SIGN.	PERS. ENDING.	ROOT.	TENSE-SIGN.	PERS. ENDING.
PRESENT.	SING. 1	—	wanting.	e	—	wanting.	e	1	—	wanting	e	—	wanting.	e
	SING. 2	—		eſt, ſt	—		eſt	2	—		eſt, ſt	—		eſt
	SING. 3	—		et, t	—		e	3	—		et, t	—		e
	PLUR. 1	—		en, n	—		en	1	—		en, n	—		en
	PLUR. 2	—		et, t	—		et	2	—		et, t	—		et
	PLUR. 3	—		en, n	—		en	3	—		en, n	—		en
IMPERFECT	SING. 1	—	wanting.	—	—	wanting.	e	1	t or et	+	e	t or et	+	e
	SING. 2	—		eſt, ſt	—		eſt	2	t or et	+	eſt	t or et	+	eſt
	SING. 3	—		—	—		e	3	t or et	+	e	t or et	+	e
	PLUR. 1	—		en	—		en	1	t or et	+	en	t or et	+	en
	PLUR. 2	—		et	—		et	2	t or et	+	et	t or et	+	et
	PLUR. 3	—		en	—		en	3	t or et	+	en	t or en	+	en

	IMPERATIVE.			INFINIT.		IMPERATIVE.			INFINITIVE.	
	PERSONS.	ROOT.	TENSE-SIGN. PERS. ENDING.	ROOT.	ENDING.	PERSONS.	ROOT.	TENSE-SIGN. PERS. ENDING.	ROOT.	ENDING.
PRESENT.	SING. 1	—	—			1	—	—		
	SING. 2	—	e			2	—	e		
	SING. 3	—	e			3	—	e		
	PLUR. 1	—	en	—	en	1	—	wanting. en	—	en
	PLUR. 2	—	et, t			2	—	et, t		
	PLUR. 3	—	en			3	—	en		

PARTICIPLES.			PARTICIPLES.	
PRESENT.	PERFECT		PRESENT.	PERFECT.
—end	ge—en		—end	ge—et or t

Remark. The sign + in the table above is used as in Arithmetic, i. e. to indicate that the parts et+e are to be united; as, e t e.

§ 76. Observations on the preceding table.

(1) Observe, in the table above, that the terminations in all places, except the Imperfect of the New form, are to be added *directly* to the root. In the place excepted (*Imperfect of the New form*), there comes between the root and the personal ending, a sort of *tense-sign* (et or t), which is not necessary to verbs of the Old form: because in *them* the Imperfect is made by means of a change in the radical vowel

(2) It may, also, be noticed that a characteristic difference in *form*, between the Indicative and the Subjunctive (3d person sing.) is that the former ends in et or t, the latter always in e; and that the *personal ending* in the first and third person sing. of the Imperfect of the *Old form*, is wholly omitted.

(3) It may further be observed, that the e in the terminations eſt and et, of the Indicative, is retained or omitted just according to what is demanded by euphony. In the *Subjunctive*, for the most part, the full termination is preserved.

(4) For the same reason, also, that is, for the sake of euphony, when the root of a verb ends in el or er, the vowel e of any termination beginning with that letter, is commonly omitted; as, hämmern (not hämmer e n), to hammer; ſammeln (not ſammel e n), to collect. Sometimes, however, the e of the *root* is rejected; as ich ſammle (not ſamml e le), I collect.

SKETCHES FOR YOUNG THINKERS.

(*Continued from page* 269.)

Leaving the classic lands, if we turn attention to America, there we will find at least one instance worthy of more honour than we can render. *Benjamin Franklin* is one of the names that will never be consigned to oblivion. He was the son of a soap-boiler and tallow-chandler, first apprenticed to a cutler and eventually to a printer; hard was his fate, but manly his courage! His thirst for knowledge was absolutely insatiate. With Plutarch's Lives, De Foe's "Essay on Projects," and "an odd volume of the Spectator," he spent his leisure hours, and extracted from them whatever of benefit they could yield. He coped with poverty, hardship, and envy, with a magnanimity as wonderful as it was laudable. From one eminence to another he rose by his own power, until his name became "a household word," and his genius universally admired! Mirabeau has justly called him "the philosopher for whom two worlds contended." His knowledge was encyclopædic, and how did he obtain it? Let him speak for himself, and let young men mark his words. "My brother and the rest going from the printing house to their meals, I remained there alone, and despatching presently my light repast (which was often no more than a biscuit, or a slice of bread, a handful of raisins, or a tart from the pastrycook's and a glass of water) had the rest of the time till their return for study; in which I made the greater progress from that greater clearness of head, and quicker apprehension, which generally attend temperance in eating and drinking." This was the method pursued by the man who has so distinguished himself in almost every department of knowledge. We are persuaded that this single passage from his autobiography, contains the secret of his success. We have here his exemplary temperance, his characteristic frugality, and his indomitable perseverance. This is a "threefold cord not quickly broken." Had Franklin been like the majority of his fellow-workmen, his earnings would have been squandered in intoxicating drinks, his time consumed in frivolous or debasing occupations, and his name been unknown beyond the town in which he was born. Franklin was a *self-made* man. "He came—he saw—he conquered." The soft hand of fortune never aided him; if his spirit had not been heroic in the best sense of the term, he would have failed to overcome the difficulties which beset him on every hand. No man was ever great without labour. Labour is the only "regia via" (royal road) to knowledge. There are differences of capacity and of taste, but labour is the great leveller; it throws down mountains, and raises valleys; it threads labyrinths, and traverses ravines, with herculean power it smites every obstacle and prostrates every barrier, goes on from victory to victory, until by its conquests it reaches the summit of human attainment, whence it waves the banner of triumph, and cries to others "do ye likewise!"

We turn at length to England, and content ourselves with two examples. England is not scanty in proofs that intellectual excellence is independent of social position. No land is so prolific, *but she may yet be more so*, and it is the special aim of these sketches to awaken in the breasts of young men the desire to further their own improvement, and dignify their own position. The young men of England as a class, are wiser, more useful and more enterprising than any young men on the face of the globe. We may go further and affirm, that in no country are there so many *self-elevated* men as in England; and yet once more, that no nation affords so many facilities for intellectual and social progress as our own. England, in a large sense, moves the world. It is the pole-star to which nations look. Its literature is rich, vast, and varied. Its commercial spirit, enterprising, and increasingly extending; its institutions are almost innumerable, and constitute its peculiar glory; its army, navy, government, and sovereign, such as no nation or empire can boast. From its history we could quote hundreds of instances, which would serve as examples of our present purpose. Two however will abundantly suffice.

Isaac Milner was the son of a poor Leeds weaver. He was early left an orphan, and in conjunction with his brother, laboured as a cotton spinner; their earnings were the sole dependence of their widowed mother. Joseph and Isaac toiled together reading and spinning every hour of the day. A neighbourly subscription furnished the means of sending the former to College. Isaac, left alone with his mother, continued to spin and read. Meanwhile Joseph was winning his rapid way at Cambridge, and was eventually appointed to a curacy, and the Mastership of the Free Grammar School in Hull. Isaac had by this time become apprenticed to a weaver, but while he laboured at the loom he was not unmindful of his learning, for, by his unaided efforts, he had gained a tolerable knowledge of Greek and Latin. At his brother's request, a clergyman waited upon him to ascertain the extent of his literary acquirements. Isaac had a "Tacitus," lying beside him, and underwent his examination with marvellous ease; answering every inquiry, and acquitting himself in a masterly manner, though only nineteen years of age. He was sent to Hull; soon rose superior to his situation, and in a few years he was not known as Isaac the weaver, but as Dr. Isaac Milner, Dean of Carlisle, and Master of Queen's College, Cambridge; also as the successor of the immortal Newton, as Lucasian Professor of Mathematics.

Does the youthful reader of these words feel his heart thrill with aspiration? We say, encourage that aspiration, seek to satisfy it; it is a call to which obedience must be yielded. This aspiration will more than counterbalance the labour necessary to its realisation. It will act as a *stimulus* to exertion, cheering the loneliness of solitude, ministering to the necessary strength, and aiding in the conquest of difficulty. The student must have an *object* in studying; with him it must not be mere pleasure or pastime. An earnest intent to accomplish a given result, must be ever present in his mind, or his energies will be frittered away in miscellaneous, unconnected, and ill-digested pursuits. The learned Hugo Grotius was wont to complain that he had spent his whole life-time in "laboriously doing nothing." Although posterity will not endorse this self-accusation, yet the sentiment is pregnant with meaning. Many men fail in accomplishing anything, because they are labouring without *aim*. There is no want of *energy*, no want of *desire* either; they are continually busy, yet their business brings no adequate returns, for the simple reason that they are "all things by turns, and nothing long." Valuable acquisition can only be made by a vigorous *concentration*, and prolonged exercise of the intellectual powers. The tyro must drink deeply at the "Pierian springs." It is possible for a man to make much *parade* with very little *substance*. He may have a smattering of everything, and cause less informed persons to stare in overwhelmed amazement. Yet in reality, his shallowness may only be equalled by his egregious vanity. Such a literary changeling is captivated with every novelty. *Now*, he is spending his strength in Mathematics, *anon* he has abandoned Euclid, and is feasting on Homer or Virgil, when suddenly proving traitorous to classics, he turns his fickle attention to the sciences: he ranges in the heights of astronomy, but soon becomes star-sick, and leaving the aerial regions, he next dives beneath the earth's crust and falls into passionate love with fossils, specimens, and remains; but as all passion has a corresponding reaction, the unstable adventurer folds his arms in self-approbation, and talks in pompous bombast of his own achievements. "One thing at a time," is an old saying; but no less true than antiquated. Let a man, if possible, discover his peculiar forte, and pursue it with diligence. Much depends on the commencement. A Demosthenes would never have made a Virgil; nor would Homer have made an Aristotle.

Each had his sphere, and each revolved in his orbit with matchless brilliance. We remember the man in the ancient times, who was regarded by his tutors as incapable of making any progress in learning, but when shown geometry, he felt it to be a congenial study, and soon distanced all his competitors in Mathematics. The principle is capable of universal application. He who would not rise to mediocrity as an arithmetician, might excel in oratory, painting, or poetry; and conversely, he who would not acquit himself respectably in the latter, might rise to eminence in the former. "Every man in his own order." "One star differeth from another star in glory." We make no invidious comparisons between men. Let the poet sing and the orator disclaim, let the logician argue and the chemist analyse, let the historian ponder the annals of the world, and the painter embody the creations of his genius on the canvass, all speak one voice; they set forth the dignity and grandeur of the human mind; they prove that mind in all its multifarious developments, is the same living, immortal, and accountable existence; such differences in preference and action, are but so many radii commencing in one centre, so many beams from one refulgent orb, or so many parts in one grand anthem proclaiming in sweetness and power—"the hand that made us is divine." (*To be continued.*)

LESSONS IN MECHANICS.—No. XXVII.

ELECTRIC TELEGRAPH.

THE electric telegraph has ceased to be a wonder; it is now one of the common things of every-day use, and yet, compared with the results of this extraordinary application of the phenomena of Nature, the fictions of the imagination become pale and dull. By this instrument it is possible to transmit intelligence to a distance of 1,000 miles at the rate of about 20,000 words per hour!

The physical cause of electricity is still mysterious, but the utility of its application is everywhere admitted. The manner in which the electric current is produced and maintained will be explained in another place; we confine our inquiry, for the present, to the method of application adopted in the communication of intelligence. This is done by conducting wires. These wires are usually made of iron, about the sixth of an inch in diameter, coated by galvanic action with zinc. The advantage of employing zinc—which is done in all European countries—is, that by the action of the air it rapidly oxydises, and forms a protecting coating to the iron conducting wire. Steel is sometimes used instead of iron. The method in which the wires are used for the purpose is familiar to everybody; along nearly every line of railway we observe these wires sweeping from post to post; and almost in every street we notice them sweeping over our heads and our homes from one telegraph station to another. Of course, the tendency of the electric current is to take the shortest course to the ground, and it is therefore very essential that the posts to which the wires are attached should possess the least possible conducting power. Consequently, every pole or post is furnished with glass or porcelain tubes or rollers, through which the wires pass. Glass or porcelain are among the most perfect non-conducting substances known; and the electric current passing along the wire is unaffected by either of these substances.

As the distance over which the wires extend from one part to another is often very considerable, and the sweep of the wires would consequently be great, and damage very probable in windy weather, additional posts are provided at certain intervals, known as winding posts, within which, insulated by glass or crockery, is a ratchet-wheel, by means of which the wires are tightened and drawn up to full tension. Every precaution, however, is taken that nothing shall be allowed to interfere with the free current of the electricity, and in order to avoid even the possibility of this, in consequence of the means used to increase the tension, an additional piece of wire is usually introduced, which connects the main wire at points above and below the winding post.

The electric wires, however, are not in all instances carried over the ground, they are sometimes conducted through subterranean channels; and the wires are then usually wrapped in cotton thread, coated with resin, tar, and grease. Gutta-percha coatings also are used, especially in submarine cables.

WORKING THE TELEGRAPH.

The various methods of working the telegraph will be given in an article on Natural Philosophy, and a brief statement may here suffice.

Before a message is about to be delivered, the communicator is so placed that a bell is rung; a bell is rung in return, to show that the clerk at the other end of the wire is prepared to receive the message; the wires are then charged, and being brought into connection with the indicator on the dial-plate, the message is spelt out letter by letter.

ATLANTIC CABLE.

The Atlantic telegraph cable was constructed of seven small copper wires twisted into one, and encased in gutta-percha; this was surrounded by eighteen small wire ropes, each composed of seven small wires twisted together, and being scarcely larger than a fourpenny-piece.

WORKING THE TELEGRAPH BY STEAM.

A plan has been patented for working the electric telegraph by steam, *machine* electricity being used to puncture paper at the distant stations, so as to produce legible symbols. This kind of electricity has, however, been tried long since, but the attempt failed, as it ever must fail, on account of the impossibility of insulating electricity of such high intensity during its transmission. The rapidity which seems to be contemplated by the patentees, in this case, would not be possible, as charges sufficient to perforate paper could not be produced in such extremely short intervals.

ANSWERS TO CORRESPONDENTS.

UN MARESHAL.—Our German students, by writing out the exercises in the German character, obtain a familiarity with the peculiar forms highly useful in correspondence. We do not think your suggestion of employing English characters possesses the least advantage.

T. FOWLER (Woolwich): A ship is reckoned *feminine*, because the noun for *a ship* is feminine in Hebrew, Greek, and Latin.—REGULAR SUBSCRIBER (Rochdale): We know not the author of the lines; but we do not admire them. As an answer to them we would strongly recommend you to peruse seriously and attentively "Young's Night Thoughts," Nights vi. and vii., entitled "*The Infidel Reclaimed*," but especially Night vii., from which we extract the following lines, applicable to the case in hand:—

"Eternal life is Nature's ardent wish;
What ardently we wish, we soon believe:
Thy tardy faith declares that wish destroyed.
What has destroyed it? shall I tell thee what?
When fear'd, the future is no longer wish'd;
And when unwish'd, we strive to disbelieve:
Thus infidelity our guilt betrays.
The future fear'd! An infidel and fear!
Fear what? a dream! a fable! How thy fear,
Unwilling evidence, and therefore strong,
Affords my cause an undesign'd support!
How disbelief affirms what it denies!
It unawares asserts immortal life.
Surprising! infidelity turns out
A creed, and a confession of our sins:
Apostates, thus, are orthodox divines.
From *purer manners* to sublimer faith,
Is Nature's unavoidable ascent.
An honest Deist, where the Gospel shines,
Matur'd to nobler, in the Christian ends."

A. B. LEWIS.—Your method of study is very good; it is methodical, and no steady progress can be made without method. We are inclined to think that your plan would, however, be improved, if you kept to the *same* studies at the *same* hour every day. Thus we notice that you take arithmetic on Monday from 8 to 9 a.m.; Tuesday, 1 to 2 p.m.; Wednesday, 9 to 10 a.m.; Thursday, 2 to 3 p.m.; Friday, 3 to 4 p.m.; Saturday, 7 to 8 a.m. Why not persevere in devoting the same hours every day to arithmetic, and so on, with your other studies?

C. E. G.—A very simple, and at the same time an active galvanic circuit may be formed by an arrangement of three plates of copper and zinc immersed in a glass vessel containing a weak solution of sulphuric acid and water. Metallic contact is made by wires, soldered to the plates, the poles intersecting. The current of positive electricity, when the circuit is closed, passes from the zinc through the liquid to the copper, and from the copper along the conducting wires to the zinc. A current of negative electricity traverses the circuit also from the copper to the zinc in a direction precisely reversed.

YOUNG PHILOSOPHER.—The phenomenon of the rainbow is caused by the rays of the sun falling on the drops of rain. The same effect may be produced artificially. Take a glass of water; suspend it at a certain height in the sun's rays, above the eye: the spectator, standing with his back to the sun, will see the refraction and reflection of red light; if then the globe be slowly lowered, the observer retaining his position, the red light will be replaced by orange, and this in its turn by yellow, and so on, the globe at different heights presenting to the eye the seven primitive colours in succession.

LESSONS IN GEOGRAPHY.—No. XXIX.

MAP OF AUSTRALASIA.

The term *Australasia* plainly means *Southern Asia*, and includes the large island, or rather insulated continent, now called *Australia* (but formerly *New Holland*), with a number of smaller islands lying at various distances around it, which have been variously grouped by different geographical writers. Mr. Barrow included under the term Australasia the following:—1. New Holland, or Australia; 2. Van Diemen's Land; 3. New Zealand; 4. Papua, or New Guinea; 5. New Britain and New Ireland; 6. Solomon's Islands; 7. New Hebrides; 8. New Caledonia. Later writers, especially the compilers of books on geography, have narrowed this list; and New Zealand is generally excluded, with two or three of the smaller groups; these being referred to the list comprehended under the name of *Polynesia*.

Golden Point, Mount Alexander.

The most important part of Australasia, is the continent of Australia, or, the great island of New Holland, so called because it was discovered by the Dutch. It is bounded on the north by the Oriental Archipelago, the Gulf of Carpentaria, and Torres' Strait; on the south, by the South Pacific Ocean and Bass's Strait; on the east, by the South Pacific Ocean; and on the west, by the Indian Ocean. The most northern point of Australia is Cape York, in Lat. 10° 43′ S. and Long. 142° 29′ E., and the most southern point is Wilson's Promontory, in Lat. 39° 11′ S. and Long. 146° 25′ E. The most eastern point is Cape Byron, in Lat 28° 38′ S. and Long. 153° 37′ E., and the most western point is Steep Point, in Lat. 26° 5′ S. and Long. 112° 50′ E. From these data, it is plain that the greatest breadth of Australia from north to south, is about 2,000 miles, and its greatest length from east to west is about 2,500 miles. As the average length and breadth of this continent are considerably less than these extreme measurements, the area or surface of Australia is reckoned about 3,000,000 of square miles, or about 2,000,000,000 of imperial acres of land; so that here, surely, there is room enough for the surplus population of the United Kingdom to expand, to vegetate, and to fulfil their duties as human beings and worshippers of the true God, without distressing themselves, and overburdening the country which gave them birth. Besides, there is gold here in abundance, and means for procuring food; all that is wanted is a stern government dependent on the mother-country. Instead of *New Holland* or *Australia*, it should at once be called *Southern Britain*, and be filled with the surplus of our teeming population.

Looking at the extent of Australia, which is only about ¼ part less than Europe, or at the most, according to some, ⅓ less, it follows that this continent is the most valuable appanage of the British crown. It is true that this continent is uncultivated and even unexplored; but we trust that speedy measures will be taken for removing both of these evils, and for rendering it an integrant part of the empire,—a part where our present sickly, starving, and discontented population may soon become healthy, wealthy, and wise, and receive the full reward of their labour; while at the same

time, they shall enjoy the blessings of good government, and be permitted to worship God according to the dictates of conscience, not only without molestation, but while enjoying all the rights of honourable citizenship among men.

The continent of Australia is compact in form, approaching that of the section of a human head and neck, when viewed vertically from east to west; the peninsula which terminates in Cape York representing the nose, and the colony of Victoria, or Port Philip, the back of the head. There are few large *inlets of the sea* around its shores, so that *the interior* of this continent to a *very large extent* is wholly unknown. The only *bay* of considerable magnitude is called the Gulf of Carpentaria, which is situated on the north between Torres' Strait, and the waters of the Oriental Archipelago. In this gulf are situated Groote Eylandt, Wellesley and Pellew Islands. Westward of this gulf, are Arnheim's Bay, Van Diemen's Gulf, and others on the north coast, including Cambridge Gulf, Admiralty Gulf, &c. On the west coast, are Dampier's Archipelago, Exmouth Gulf, Shark Bay, Geographe Channel, Naturaliste Channel, and Geographe Bay. On the south coast, are Tor Bay, King George's Sound, Esperance Bay, Recherche Archipelago, the Great Australian Bight with Nuyt's Archipelago and Anxious Bay, Spencer's Gulf, St. Vincent's Gulf, Encounter Bay, Discovery Bay, Portland Bay, Port Philip, Western Port, Corner Inlet, and Bass's Strait. On the east coast, are Twofold Bay, Jervis Bay, Botany Bay, Port Stephens, Moreton Bay, Hervey Bay Shoalwater Bay, Repulse Bay, Halifax Bay, Rockingham Bay, Trinity Bay, Princess Charlotte Bay, Temple Bay, and Shelbourne Bay. The Coral Sea contains the "Great Barrier Reef," extending along the northern part of the east coast for a distance of about 1,200 miles from Torres' Strait to Hervey Bay, and separated from the coast by distances varying from fifteen to 100 miles, the average being about thirty miles. The navigation between this reef and the shore is reckoned tolerably safe, the anchorage for ships being in about twelve fathoms of water.

The *Capes* and *Headlands* in this continent are numerous, but few are of much importance. Besides those mentioned already, there are on the north coast, Cape Arnheim, Point Dale, and Cape Londonderry; on the west coast, Cape Levesque, North West Cape, Cape Cuvier, Point Naturaliste, and Cape Leeuwin; on the South coast, Point d'Entrecasteaux, Cape Chatham, Point Hood, Cape le Grand, Cape Catastrophe, Cape Jervis, Cape Bernouilli, Cape Northumberland, Cape Bridgewater, and Cape Otway; and on the east coast, are Cape Howe, Sandy Cape, Cape Capricorn, Cape Palmerston, Cape Upstart, Cape Flattery, and Cape Grenville.

The *Peninsulas* are, Cape York Peninsula, bounded on the west by the Gulf of Carpentaria; Coburg Peninsula, bounded on the south by Van Diemen's Gulf; Eyre Land, bounded on the east by Spencer's Gulf; and York Peninsula, bounded on the west by Spencer's Gulf. The *Islands*, which are generally small, and in groups, with the exception of Melville and Bathurst Islands on the north west, and Kangaroo Island on the south, are the Prince of Wales and Sir R. Bourke groups in Torres' Strait; the Wessel and Goulburn groups on the north; the Buccaneer, and the Dampier groups, with Dirk Hartog's Island, on the west; the Recherche and Nuyt's Islands on each side of the Great Australian Bight; The Investigator Islands, and those at the entrance to Spencer's Gulf; King's Island, Flinder's Island, and others in Bass's Strait; the Moreton group, Sandy Islands, with the Northumberland and Cumberland group, on the east coast. Before proceeding to state any further particulars relating to this continent as well as to the surrounding islands, we may first give a general view of its great divisions hitherto explored, which constitute the most valuable colonies of Great Britain; notice the innermost point of the vast unexplored region yet reached; and state the Latitudes and Longitudes of some points or places on those islands where as yet no settlement has been made.

COUNTRIES, COLONIES, AND SETTLEMENTS IN AUSTRALASIA.

Countries.	Capitals or Chief Towns.	Latitudes.	Longitudes.	Present Ruler.	Form of Government.
AUSTRALIAN COLONIES.					
New South Wales, or Eastern Australia	Sydney	33° 51′ S	151° 14′ E	Victoria I.	Limited Monarchy.
Victoria, or Port Philip	Melbourne	37 38	145 0		
South Australia, or Spencer's Gulf	Adelaide	34 53	138 10		
Western Australia, or Swan River	Perth	31 57	115 40		
North Australia	Port Essington	11 20	132 30		
Unexplored Interior	Captain Sturt's Point	24 20	138 4		
AUSTRALASIAN ISLANDS.					
Van Diemen's Land, or Tasmania	Hobart Town	42 54	147 28	Native Princes.	Absolute Monarchy.
Norfolk Island	Sydney Bay	29 2	168 2		
New Guinea	Cape of Good Hope	0 20	132 31		
Louisiade Islands	Roussel I.	11 21	154 26		
New Britain	Port Montague	6 6	150 30		
New Ireland	Port Gower	4 48	152 48		
Solomon's Islands	Bougainville I.	5 32	154 55		
Queen Charlotte's Islands	Santa Cruz I.	10 41	166 5		
New Hebrides	Espirito Santo I.	14 56	167 14		
New Caledonia	Port St. Vincent	22 0	165 55		
Loyalty Islands		21 0	167 0		
Island of Pines		22 38	167 20		

Of the *Mountains* of Australia little is known, excepting those which border the coast. In the colony of Victoria are situated what are called the Warragong Mountains, or Australian Alps, of which the highest peak, named Mount Kosciusko, is about 6,500 feet above the level of the sea. The summits of the highest parts of these mountains are covered with perpetual snow. Along the eastern coast, particularly in the colony of New South Wales, there are other ranges of mountains at moderate distances from the sea, which have only been partially explored; the Blue Mountains, which lie to the north of the Australian Alps, are of considerably less elevation, and are intersected by deep and precipitous ravines; their highest summit is called Mount York, and is 3,292 feet high, their average elevation being upwards of 2,000 feet. Westward of this is another peak, among isolated mountains and detached groups, called Canobolas, which is 4,631 feet high. The Liverpool chain of mountains lies northward of the Blue Mountains and is of greater elevation, varying from 2,000 feet to 4,000 feet, Mount Lindesay, the highest peak, being about 5,700 feet above the level of the sea. Between these ranges are undulating and watered regions, and on their western sides are high upland downs varying from 900 feet to 2,000 feet in height, such as the Liverpool Plains, the Brisbane Plains, the Darling Downs, &c. West and south-west of the Australian Alps, and within the colony of Victoria, is a hilly and watered country, reckoned more diversified than

any part of Australia yet explored. Here are the Australian Pyrenees and Grampians, the summit of Mount William in the latter range being about 4,700 feet above the level of the sea. Flinder's range extends from the eastern coast of St. Vincent's Gulf into the interior. The Darling range is parallel to the western shores of Western Australia, some peaks being about 3,000 feet high. The coast of the Great Australian Bight, which lies between Spencer's Gulf and King George's Sound, is low and sandy; whence it is called the desert coast. By far the greater part, however, of this continent is yet unexplored, and from the report of late explorers, the interior is deemed as sterile as the desert of Sahara in Africa. This report indeed must be deemed partial and unsatisfactory; because the interior was approached only from the south, and in one particular direction. It is evident, therefore, that until it has been approached from the north, east, and west, and in various directions, the report of the sterility of the interior cannot be confirmed. It is true that, as the tropic of Capricorn passes across the the interior of Australia, so the tropic of Cancer passes over the interior of Africa; but it would be absurd, without sufficient investigation and exploration, to suppose, that because the latter crosses the Great Desert of Sahara, therefore the former must also cross a great desert in the interior of Australia. Moreover, as the tropic of Cancer passes over some of the finest provinces of India, Chin-India, and China; so we might just as well infer that it passes over some of the finest districts of the hitherto unexplored regions of Australia.

There are not known to be any very large *Rivers* on this continent; but on the supposition that the whole of its sea-coast has been completely explored, this circumstance alone would argue in favour of the fact that the interior was sterile; as it is to its rivers, in a great measure, that any country owes its fertility. The river Murray rises in the western side of the Australian Alps, flows in a westerly course, dividing the colony of Victoria from that of New South Wales, and then running in a southerly direction, after a course of about 1,200 miles, falls into the sea at Encounter Bay. The principal tributaries to this river are the Murrumbridgee and the Darling; at its junction with the former it is 350 feet broad, and has a depth varying from 12 to 20 feet. Lower down, at its junction with the Darling, it increases in breadth, and from this point to its entrance into Lake Victoria, its breadth varies from 100 to 250 yards, and its depth from 12 to 40 feet. This river is said to drain a surface of more than 200,000 square miles, thus carrying to the sea, the waters from a surface more than double that of Great Britain, and equal in magnitude to that of the whole of France. Numerous rivers, whose courses are generally short, flow from the mountains on the east coast into the sea; the names of the principal of these are Shoalhaven, Hawkesbury, Hunter, Hastings, McLeay, Clarence, Richmond, and Brisbane; the largest of these again, the Hawkesbury and the Hunter, have each a course of about 206 miles; the latter is navigable for 50 miles inland, and the Richmond for 70 miles. The chief river on the west coast is Swan River having a course of about 180 miles. Of the rivers which flow into the sea on the north coast, little is yet known. There are as yet considered to be no lakes of any extent in this continent; such as it has, are formed chiefly by the rains, becoming afterwards marshes, or drying up altogether. The name of Lake Torrens has been given to an immense salt swamp, lying northward of Spencer's Gulf. Lakes Alexandrina or Victoria, Albert and Coorong, are the delta of the Murray.

Whirley's Gulley, the spot where the Gold was first discovered: Forest Creek Ranges, Mount Alexander.

Van Diemen's Land, or Tasmania, so called from the name of the discoverer of this island, lies to the south of Australia, being separated from it by Bass's Strait. It is about 180 miles long from north to south, and about 160 miles broad from east to west, having an area of about 24,000 square miles, which is about 2,000 square miles less than the area of Scotland, or $\frac{1}{12}$ of the whole. The coasts of this island are generally bold and elevated, presenting high promontories to the surrounding seas. The principal *capes* or headlands are Cape Grim, the north-west point; Circular Head, on the north; Cape Portland, the north-east point; St. Patrick's Head, Cape Lodi, and Cape Pillar, on the east coast; Tasman Head, the south-eastern extremity of Bruni Island, south-east of Tasmania; South Cape and South-west Cape; and Rocky

Point, Cape Sorel, and West Point, on the west coast. The chief *inlets* of the sea, are Storm Bay, at the mouth of the River Derwent, and further north, Oyster Bay, on the south-east; the mouth of the Tamar on the north; Macquarrie Harbour on the west; and Port Davy on the south-west. The *peninsulas* are Tasman's, east of Storm Bay; Forestier's, connected with the former by an isthmus of half a mile's breadth; and Freycinet's, on the east side of Oyster Bay. The *islands* are Bruni, formerly mentioned, which is separated from Tasmania by D'Entrecasteaux Channel; Maria, north of Tasman's Peninsula; the Furneaux group, to the north-east; Hunter's group, to the north-west; and several others. The *mountains* are Wyld's Crag in the middle of Tasmania, which is 4,500 feet high; Table Mountain behind Hobart Town, 3,750 feet high, and for eight months of the year capped with snow; and Benlomond in the north-east, 4,200 feet high. The principal *rivers* are the Derwent and the Tamar; the former, 130 miles long, falls into Storm Bay, and the latter into Bass's Strait, admitting vessels of 500 tons at its mouth. The county divisions of Australia and Tasmania, with their chief towns, are given on the Map of Australasia itself. Norfolk Island, which is annexed to the government of Van Diemen's Land, and lies at the distance of 900 miles from the east coast of Australia, is a penal settlement; it contains an area of about fourteen square miles, and has an eminence called Mount Pitt, which rises to the height of 1,050 feet. As the other islands in our table of Australasia contain no settlements, or none of any importance, we need not enlarge on the Map of Australasia.

LESSONS IN ENGLISH.—No. LXIV.

By JOHN R. BEARD, D.D.

SYNTAX: SIMPLE SENTENCES.

AGREEMENT.

THE preceding lessons have had for their object to make the student thoroughly familiar with the elements which enter into the composition of the English language. Our business now is to take them and put them together. And in so doing we must be guided by fact and by law; we must take lessons of wise master-builders; we must make their masterpieces our models.

The constructive process which I here contemplate bears in grammar the name of SYNTAX. The word is composed of two Greek roots, namely syn *with* and tasso (tag.) *I arrange*, and so denotes a systematic arrangement of words. Consequently syntax is to the grammarian what the science of architecture is to the builder; it teaches the art of construction.

Now art, of necessity, implies rules, and science is a systematic aggregate of principles. Syntax, then, is not an arbitrary thing; it is not a mere jumble of authoritative assertions. It is true, that in grammar the authority of great writers goes a long way. Yet is their authority, in the last issue, resolvable into fact and law, the facts of our nature as declared and systematised in the laws of thought or the rules of logic.

These facts lead to the conclusion that the only proper way to study grammar is to study it as the science of logical utterance. In order to study grammar as the science of logical utterance, we must trace an utterance to its simplest form, and consider the elements of which that form consists.

Take then this sentence and study it:—

The sick man drinks pure water copiously.

What I now wish you to ascertain is, whether the proposition is in its simplest form. In order to ascertain this, you must distinguish between what is essential and what is not essential in the sentence. Take then word after word and put the question, Is this essential? If not strike it out, and strike out every word until you have reduced the proposition to its simplest form, that is, the form a deviation from which would involve no sense.

The, is this essential? yes, because some particular man is intended.

Sick, is this essential? No. Erase the word; you modify but do not destroy the statement.

Man, is this essential? yes, because *man* is the very subject of the proposition.

Drinks, is this essential? yes, because *drinks* declares what "the man" does; he drinks and does not spin.

Pure, is this essential? no, for though pure tells us what sort of water the man drinks, yet the proposition is not destroyed by its omission.

Water, is this essential? yes, because water tells us what the man drinks; he drinks water, not wine.

Copiously, is this essential? no; copiously does indeed refer to the amount of water which the man drinks, but its omission by no means destroy the sentence.

Thus then we have the proposition reduced to this form:—

The man drinks water.

By a second process of a similar kind the proposition may be still more simplified.

Let it be supposed that you wish to have and contemplate the idea of water being drunk, in its most elementary form, then you do not need the article *the*; accordingly the proposition now assumes this form,

Man drinks water.

A third process of simplification brings the sentence to these two words,

Man drinks,

which set forth the simplest statement you can make on the subject. Remove the word *man*, you have no sense; remove the word *drinks*, you have no statement. Consequently the original proposition, when reduced to *man drinks*, is in its simplest form.

Such then is the form to which all propositions or sentences may be reduced. What does the form involve? Here are two words. Those two words you recognise as a noun and a verb, the one denoting a being and the other an act. Being and doing are the great facts with which all science is concerned, and the relation of being to doing, so far as the utterance of that relation is concerned, is the affair of the grammarian. The simplest proposition consists of a noun and a verb so related that what the verb declares, is declared of the noun, which is the subject of the proposition.

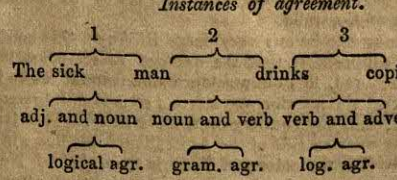
Agreement.

This, the simplest form of a proposition, may undergo modifications. You may change the subject; for instance you may make the singular *man* into the plural *men*; but if you make this change, you must also change the verb, substituting *drink* for *drinks*. Here you see an instance of grammatical agreement. *Man drinks*, *men drink*; these pairs of words severally agree, but in *man drink*, and *men drinks* the pairs do not agree. Hence you learn that *a singular noun requires a singular verb, and a plural noun requires a plural verb.*

Agreement then is the grammatical correspondence of two or more words one with another; this kind of agreement, however, is in English of less prevalence than another, which may be called logical. Grammatical agreement is an agreement in form; thus in the above example, the question is whether or not, and in which case the *s* should be added to the verb *drink*. But when I say *the sick man drinks*, and declare that there is an agreement between *sick* and *man*, do I mean an agreement of form? No, for *sick* remains unchanged whatever noun you append to it; thus we say sick *man*, sick *men*, sick *women*, sick *boy*, sick *girls*. The agreement then is not in form. Yet the two words "sick man" do agree; in what? In sense; theirs is a logical agreement.

Observe also that the grammatical includes the logical, but the logical does not include the grammatical. The last statement has just been illustrated. The former may be shown to be true, thus; when I say *the man drinks*, I make a statement in which the word *man* agrees in thought with the word *drinks*; that is, the two go together; the two are combined so as to make a proposition; the two agree in sense.

Instances of agreement.



Sentences may be either affirmative, negative, interrogative, or interrogative negative; e. g.

Affirmative.	I love my father
Negative.	I do not love my father
Interrogative.	Do I love my father?
Int. Neg.	Do I not love my father?

Dependence or Government.

There is another relation which it is necessary to understand. I mean the relation of dependence. When I say

The man drinks *water*,

I state a proposition in which a noun, or object, appears in a state of dependence; the noun *water* is dependent on the verb *drinks*.

This dependence is a logical dependence, a dependence in thought and not in form. This you may see if, changing the form of the sentence, you make water the subject of the proposition thus,

The water is drunk.

Water then remains the same, whether it is a subject or an object. Consequently the agreement is not in form, as there is no change of form to meet a change in sense.

In sense, however, *water* in the former sentence is dependent on *drinks*. It is in fact that on which the action of the verb falls.

Hence it is the thought you must consult to know whether a noun is or is not an object. This remark is necessary, because for want of inflexions ambiguity may arise, as in cases when the subject may become the object, and the object the subject; for instance,

Subject.	*Object.*
The man strikes	the boy.
Subject.	*Object.*
The boy strikes	the man.

These two statements are the reverse of each other, and observe that the reversal is made by a mere change of position; *man*, which in the first sentence is the subject, becomes in the second sentence the object, by being put after the verb. You thus learn how important a part position plays in English grammar.

In the instances here considered, the dependence is that of a noun on a verb. There is another kind of dependence; that of a noun on a preposition, as seen in the following sentence,

The water is drunk *by the man.*

Here *the man* is in sense dependent on the preposition *by*.

Not only nouns but verbs also are dependent on prepositions; thus,

The physician *orders* the man *to* drink water.

where in sense, or logically, *drink* depends on *to*.

The sentence presents a third case of dependence, for you see that the verb *drink* is in sense dependent on the verb *orders*.

Position here, too, is of consequence, for the dependent verb *drink* comes after *orders*, and after *to*; in no way could *drink* precede *to*, and scarcely could *orders* follow *drink*. Instances of dependence may also be considered as instances of government.

One word is said to be governed by another when the former is dependent on the latter; as

The man *drinks* the *water*,

where *water* is governed by *drinks*, because *water* is *dependent* on *drinks*.

Under the heads of AGREEMENT and DEPENDENCE (or government) may all the facts and laws of grammar be arranged. You see the two set forth as they appear in this sentence.

a. a.
The man drinks water.
d.

But here is an instance of agreement of which I have not spoken, namely that between the article and the noun *the man*; *the* and *man*, referring to the same object, agree in sense. I subjoin then

Instances of Agreement.	*Instances of Government.*
The article and the noun	The object and its verb
The adjective and the noun	The noun and the preposition
The noun and the verb.	A verb and a preposition
	A verb and a verb.

Verbs of different kinds.

The government of a noun by a verb takes place only when the verb is transitive. A transitive verb is a verb, the action of which passes from the subject to the object; thus in the sentence,

The man drinks water,

the act denoted by the word drinking passes directly from man to water. Verbs that have an object directly dependent on them are called transitive, that is, passing over (from Lat. trans *over*, and eo *I go*).

Transitive verbs have for their opposite verbs *in*transitive, that is, verbs the action denoted by which does not extend to an object, but remains confined to the subject. *Sleeps*, in the sentence,

The man sleeps,

is an intransitive verb.

Intransitive verbs may appear either with a personal subject, as in the last sentence, or without a personal subject, as in

It rains.

Transitive verbs may exist in two forms as

Active.	The man drinks the water
Passive.	The water is drunk by the man.

These two forms are commonly called voices; in the first the verb is said to be in the active voice; in the second the verb is said to be in the passive voice. A transitive verb is in the active voice when it has a subject and an object. A transitive verb is in the passive voice when it has only a subject. In the passive voice the object of the active verb has become the subject. Only transitive verbs can exist in the passive form.

I have endeavoured to show you that the form "man drinks" is the simplest sentence that can be constructed. A sentence equally simple can, however, exist in another shape; e. g.

The man is good.

In the analysis of this sentence, I have to introduce and explain a new term or two.

You already know that *the man* is the subject to the verb *is*, but what is *good*? The word good is an adjective, or it may be called an attributive, because it assigns the attribute or quality of the noun *man*. This attribute is connected with the subject *man* by means of the verb *is*. A verb so connecting an attribute with a subject is called a copula, or link. And that copula in union with the attribute is termed the predicate. This name is given to the united copula and attribute, because when so united the predicate and copula predicate or declare something of the subject. These facts may be exhibited thus:—

Subject.	*Predicate.*	
	copula	attribute
1. The man	is	good.
	Verb.	*Object.*
2. The man	drinks	water.

In the second sentence you see *drinks water*, that is, a verb and its object, is the predicate, for it is they which there predicate or declare something of the subject.

In the case of intransitive verbs, the predicate has no attribute as,

Subject.	*Predicate.*
The boy	runs.

A yet more abstract form of a simple sentence is found in this

Subject.	*Predicate.*
The man	is

where *is* is the predicate to the subject, *the man*. Here, however, observe that the word *is* is employed in the sense of *exists*, and so is seen to belong to the general class of intransitive verbs.

It may be added that the verb *to be* is sometimes called *a substantive verb* because it denotes existence in its most abstract form.

I may subjoin here that intransitive verbs are also denominated *neuter* (*neither*) *verbs*, because they are properly *neither* active *nor* passive.

LESSONS IN FRENCH.—No. LXXV.

By Professor Louis Fasquelle, LL.D.

§ 99.—Repetition and Omission of the Nominative Pronoun.

(1.) It is proper to repeat the personal pronouns *je, tu, il, nous, ils,* before every verb :—

Je lis, *j'*écris, *je* me promène. | *I read, write, and walk.*

(2.) The omission of the pronouns *je, tu, il, nous, vous, ils,* before the second or third verb of a sentence, is a matter of choice, and subject to the following restrictions :—

These pronouns must be repeated :

1. When the verbs are not in the same tense :—

Je prétends et *je* prétendrai toujours. | *I maintain and will always maintain.*

2. When the first verb is in the negative and the second in the affirmative :—

Je *ne* plie *pas* et *je* romps. | *I do not bend and I break.*

3. When the propositions are connected by conjunctions other than *et*, and; *ou*, or; *ni*, nor; *mais*, but :—

Nous détestons les méchants, parceque *nous* les craignons. | *We detest the wicked, because we fear them.*

(3.) Although we would advise the student to follow the 1st rule of this section, particularly with regard to the pronouns *je, tu, nous, vous,* and thereby avoid all uncertainty, we give a few examples, where the pronouns after the first are—

Repeated.	*Omitted.*
Je veux qu'on dise un jour aux peuples effrayés, *Il* fut des Juifs, *il* fut une insolente race. Racine. *I wish that they may one day say to the frightened nations, there were Jews, there was an insolent race.*	*Il* s'arrache les cheveux, se roule sur le sable reproche aux Dieux leur rigueur, appelle en vain à son secours la cruelle mort. Fénélon. *He (Telemachus) tears his hair, rolls on the sand, reproaches the Gods with their rigour, and calls in vain cruel Death to his aid.*
Il s'écoute, *il* se plait, *il* s'adonise, *il* s'aime. J. B. Rousseau. *He listens to himself, he pleases himself, he adorns himself, he loves himself.*	L'Eternal est son nom, le monde est son ouvrage, Il entend les soupirs de l'humble qu'on outrage, Juge tous les mortels avec d'egales lois, Et du haut de son trône interroge les rois. Racine. *The Eternal is his name, the world is his work; he listens to the sighs of the humble oppressed, judges all mankind with equal laws, and interrogates the mighty from his lofty throne.*
Nous avons dit, et *nous* allons prouver, qu'il n'y a pas de bonheur sans vertu. Beauzée. *We have said, and we are going to prove, that there is no happiness without virtue.*	

§ 100.—Place of Personal Pronouns used as the Regimen of Verbs.

(1.) The personal pronoun used as *régime direct*, (direct object or accusative) [§ 42, (4.)], and the pronoun used as *régime indirect*, (indirect object) with the preposition *to*, expressed or understood, in English, (dative of the Latin), [§ 42, (3.)] are in French placed before the verb :—

Direct Regimen.	*Indirect Regimen.*
Je *vous* vois, *I see you;* Vous *les* voyez, *you see them.*	Je *vous* parle, *I speak to you;* Vous *leur* parlez, *you speak to them.*
Madame, enfin le ciel près de vous *me* rappelle. Racine *Madam, at last heaven recalls me near you.*	A ce prix je *leur* permets de vivre. Racine. *On that condition I allow them to live.*
Pauvre science humaine! Un fil *t'*arrête hélas, comme le moucheron Du bon Jean la Fontaine. Aimè Martin. *Poor human science! a web stops thee, like the gnat of the good Jean La Fontaine.*	Il faut compter sur l'ingratitude des hommes, et ne laisser pas de *leur* faire du bien. Fénélon. *We should expect ingratitude from men, but not cease, on that account, to do them good.*

(2.) 1st Exception : When the verb is in the second person singular, or in the first or second person plural of the imperative used affirmatively, these pronouns must be placed after it :—

Voyez-*les, see them.*	Parlez-*leur, speak to them*
Rends-*moi* chrétienne et libre, à tout je me soumets. Voltaire. Dépouillons-*nous* aussi d'une vaine fierté. Boileau. Allez, conduisez-*la* dans la chambre prochaine. Racine.	*Make me a Christian and free, I submit to everything.* *Let us divest ourselves of a vain pride.* *Go, conduct her into the next room.*

(3.) *Remark :* But if the verb in these persons of the imperative be used negatively, the pronouns will be placed according to Rule (1.) :—

Ne *les* voyez pas, *do not see them.*	Ne *leur* parlez pas, *do not speak to them.*
Si l'on vous propose de faire une mauvaise action, ne *la* faites pas. Dissipe tes douleurs, Et ne *me* trouble pas par ces indignes pleurs. Boileau.	*If they propose to you to commit a bad action, do it not.* *Dissipate thy grief, and trouble me not by these unworthy tears.*

(4.) 2nd Exception : With reflective verbs, when the *régime indirect** is a person, the pronoun representing it must follow the verb. This must also be the case with the following verbs :—

Aller à, *to go to, towards.*
Accourir à, Courir à, } *to run to, towards.*
Venir à, *to come to.*
Boire à, *to drink to.*
Penser à, songer à, *to think of.*

Je m'adresse *à lui, à eux.*	*I apply to him, to them.*
Je vais *à vous* ou *à eux.*	*I go to you or to them.*
Vous courez *à lui* ou *à elle.*	*You run to him or to her.*
Elle vient *à moi* ou *à vous.*	*She comes to me or to you.*
Vous pensez *à nous* ou *à lui.*	*You think of us or of him.*
Ils songent *à eux* et *à vous.*	*They think of them and of you.*

(5.) The pronoun used as the indirect regimen of the French, which answers to the indirect object of the English preceded by a preposition other than *to*, and to the genitive and ablative cases of the Latin, is always, in French, placed after the verb, and preceded by one of the prepositions de, *of*; pour, *for*, avec, *with*, &c.

Je parle *de lui* et *de vous.*	*I speak of him and of you.*
J'écris *pour lui* et *pour elle.*	*I write for him and for her.*
Qui rit d'autrui, Doit craindre qu'en revanche on rie aussi *de lui.* Molière.	*He who laughs at others, must fear that in their turn they may also laugh at him.*

(6.) When two imperatives, used affirmatively, are joined together by the conjunction *et*, the pronoun regimen of the second may be placed before it, or after it, as in English :—

After the Verb.	*Before the Verb.*
Sortez et laissez-*moi* dormir. *Go out, and let me sleep.*	Sortez et *me* laissez dormir. *Go out, and let me sleep.*
Marche, et *suis-nous* du moins où l'honneur nous appelle. Boileau. *March and follow us, at least, where honour calls us.*	Laissez-*moi* cette chaîne, ou m'arrachez le jour. La Harpe. *Leave me this chain, or deprive me of life.*
Cessez, vous dis-je et *laissez-moi,* Madame, exécuter les volontés du roi. Racine. *Cease, I tell you, and suffer me, Madam, to execute the commands of the king.*	Vous attendez le roi; parlez et *lui* montrez, Contre le fils d'Hector tous les Grecs conjurés. Racine. *You expect the king; speak and depict to him all the Greeks conspiring against the son of Hector.*

§ 101.—Respective Place of the Pronouns when two occur with one Verb.

(1.) When two pronouns occur, one *régime direct* (accusative) and the other *régime indirect* (dative), the pronoun *régime indirect*, if not in the third person singular or plural, must precede the pronoun *régime direct* :—

Il *me* le donnera.	*He will give it to me.*
Il *te* le prêtera.	*He will lend it to thee.*
Ils *nous* les montreront.	*They will show them to us.*
Vous *nous* le direz.	*You will say it to us.*
Quand je puis obliger, ma joie est assez grande; Pour n'attendre jamais que l'on, *me le* commande. Boursault.	*When I can oblige, my joy is great enough, without my wishing to wait until they command me* (i. e., *they command it to me.*)
Je *vous le* dis encore, vous n'aurez l'estime des hommes que par une solide vertu. Mme. De Maintenon.	*I repeat it to you; you can obtain the esteem of men only by real virtue.*

* Object of the verb preceded in English by *to*, expressed or understood, the dative of the Latin.

(2.) When the pronoun *régime indirect* is in the third person singular or plural, it must then be placed after the *regime direct* :—

On *le lui* donnera.	*They will give it to him.*
Vous *le lui* prêterez.	*You will lend it to him.*
Nous ne *le leur* prêterons pas.	*We will not lend it to them.*
Vous *le leur* écrirez.	*You will write it to them.*
Le plus sûr appui de l'homme est Dieu, et vous voulez *le lui* ravir. BOISTE.	*The surest support of man is God, and you wish to deprive him of it.*

(3.) *Remark :* The reflective pronoun *se*, used as an indirect regimen, makes an exception to the above rule, as it takes precedence of the direct regimen :—

Si les hommes pensent mal les uns des autres, du moins ils ne *se le* disent pas. ANONYMOUS.	*If men think ill of each other, at least they do not say it to each other.*

(4.) The Rules (1.) and (2.), also the Exception (3.), apply to the imperative used negatively ; but Rule (1.) cannot apply to the imperative used affirmatively.

Examples of the Imperative used Negatively.

Ne *nous le* donnez pas [Rule (1.)].	*Do not give it to us.*
Ne *le leur* prêtez pas [Rule (2.)].	*Do not lend it to them.*
Qu'ils ne *se le* disent pas [Remark (3.)].	*Let them say it to themselves.*
Du sang de tant de rois c'est l'unique héritage ; Ne *me* l'enviez pas, laissez-moi mon partage. VOLTAIRE.	*Of the blood of so many kings, it is my only inheritance ; do not envy it (to me), leave me my portion.*

(5.) When the imperative used affirmatively has two regimens, the pronoun *régime direct* precedes the *régime indirect* in all the persons :—

Envoyez-*le-moi*.	*Send it to me.*
Donnez-*le-nous*.	*Give it to us.*
Qu'ils *le lui* donnent.	*Let them give it to him.*
Montrez-*le-moi*, ce mortel privilégié. BALLANCHE.	*Show him to me, that privileged mortal.*
Mets-*le-toi* dans l'esprit ; qui fait mal, trouve mal. ANONYMOUS.	*Put this into thy mind ; he who does evil, finds evil.*

§ 102.—RULE.

When two pronouns in different cases, representing rational beings, occur, and the pronoun in the *régime direct* is in the first, or in the second person, this pronoun must be placed according to the general rules ; and the pronoun in the *régime indirect* must follow the verb, and be preceded by the proper preposition :—

Il nous a recommandés *à eux*.	*He has recommended us to them.*
Il vous a présenté *à elle*.	*He has presented you to her.*
Nul ne peut *se* comparer *à lui*, pour faire en peu de temps, un travail fort inutile. LA BRUYÈRE.	*No one can compare himself to him, for doing in a short time a very useless piece of work.*

§ 103.—RULE.

(1.) The personal pronouns *lui, elle, eux, elles*, used as indirect regimens of verbs and preceded by a preposition, can only relate to persons, and not to things. The expressions *of* or *from it* ; *of* or *from them*, when relating to things, should be rendered by *en* [§ 39, (17.)] :—

J'*en* parle ; j'*en* donne.	*I speak of it, of them ; I give of it (some).*
J'aime trop la valeur, pour *en* être jaloux. LA HARPE.	*I prize valour too highly to be jealous of it.*
Celui qui est dans la prospérité, doit craindre d'*en* abuser. FÉNÉLON.	*He who is in prosperity should fear to abuse it.*

(2.) The relative pronoun *y* [§ 39, (18.) § 111], is used in French in relation to things, *for the indirect regimen*, expressed in English by *at* or *to* (dative). It means *at* or *to it* ; or *to them* ; *thereto*, &c. :—

J'*y* songerai,	*I will think of it.*
Faites-*y* attention,	*Pay attention [to it.*
C'est lorsque nous sommes éloignés de notre pays, que nous sentons surtout l'instinct qui nous *y* attache. CHATEAUBRIAND.	*It is when we are far from our country that we feel, above all, the instinct which attaches us to it.*
Tous nos jours vont à la mort, le dernier *y* arrive. MONTAIGNE.	*All our days travel towards death, the last one arrives at it (reaches it).*
Les choses de la terre ne valent pas qu'on s'*y* attache. NICOLE.	*The things of the earth are not worth our attachment to them.*

§ 104.—PLACE OF EN AND Y.

(1.) The place of *en* and *y* is the same as that prescribed by Rule (1.) § 100, for the personal pronouns. They are also subject to Exception (2.) and Remark (3.) of the same §. See examples above.

(2.) *En* and *y* are always placed after the other pronouns régimes :—

Il *nous en* a parlé.	*He has spoken to us of it.*
Il *lui en* a dit quelque chose.	*He has told him something of it.*
Parlez-*lui-en*.	*Speak to him of it.*
Ne *nous en* parlez pas.	*Do not speak to us of it.*
Je *l'y* ai renvoyé.	*I have referred him to it.*
Renvoyez-nous-*y*.	*Refer, or send us back to it.*
Ne nous *y* renvoyez pas.	*Do not refer us to it.*

§ 105.—REPETITION OF THE PRONOUNS, RÉGIMES.

These pronouns must, in French, be repeated before every verb :—

Ah ! mon enfant, que je voudrais bien *vous* voir un peu, *vous* entendre, *vous* embrasser, *vous* voir passer. MME. DE SÉVIGNÉ.	*Ah ! my child, how I should like to see you for a short time, to hear you, embrace you, see you pass.*
Je veux *le* voir, *le* prier, *le* presser, *l'*importuner, *le* fléchir. BESCHERELLE.	*I will see him, entreat him, press him, importune him, bend him.*

§ 106.—THE POSSESSIVE PRONOUN.

(1.) The possessive pronoun, in French, is always preceded by the article [§ 34, (2.) (3.)] which, as well as the pronoun itself, agrees in gender and number with the noun represented § 35, (1.)] :—

L'ambition ni la fumée ne touchent point un cœur comme *le mien*. J. J. ROUSSEAU.	*Neither ambition nor smoke have power on such a heart as mine.*
Au lieu de déplorer la mort des autres, je veux apprendre de vous à rendre *la mienne* sainte. BOSSUET.	*Instead of bewailing the death of others, I wish to learn from you how to render my own holy.*

(2.) The pronouns *le nôtre, le vôtre* [§ 34, (3.)], &c., unlike the adjectives notre, votre, &c., always take the circumflex accent :—

La musique des anciens Grecs était très différente de *la nôtre*. VOLTAIRE.	*The music of the ancient Greeks was very different from ours.*

(3.) When the English possessive pronouns, *mine, thine*, &c., come after the verb *to be*, they are often rendered into French by the indirect pronouns *à moi, à toi* :—

Ce livre est *à moi*.	*That book is mine.*
Ces plumes sont-elles *à vous* ?	*Are these pens yours ?*

§ 107.—THE DEMONSTRATIVE PRONOUN.

(1.) The demonstrative pronouns [§ 36] can never be placed before nouns. They merely represent them :—

La meilleure leçon est *celle* des exemples. LA HARPE.	*The best lesson is that of examples.*
N'oublie jamais les bienfaits que tu as reçus ; oublie promptement *ceux* que tu as accordés. BOISTE.	*Never forget the benefits which thou hast received ; forget quickly those which thou hast conferred.*

(2.) The pronouns *celui, celle, ceux, celles*, as has been said [§ 37, (2.)], are often used absolutely, not only in the nominative, but also in the *régimes*, direct and indirect. They have then the sense of *he who, him whom, of whom ; that which, of which*. They apply, in this sense, as well to *things* as to *persons* :—

Celui qui compte dix amis, n'en a pas un. MALESHERBES.

On ne saurait forcer *celui* qui ne veut pas.

L'harmonie la plus douce est la voix de *celle qu'*on aime. LA BRUYÈRE.

He who reckons ten friends, has not one.

We cannot compel him who will not.

The sweetest harmony is the voice of her whom we love.

(3.) The French use *celui, celle, ceux, celles,* indifferently for *this, that.* When they institute a contrast or a comparison, they suffix the adverbs* *ci* (*ici*) and *là* to the pronouns [§ 37, (3.)]:—

Corneille nous assujettit à ses caractères et à ses idées; Racine se conforme aux nôtres. *Celui-là* peint les hommes, comme ils devraient être, *celui-ci* les peint tels qu'ils sont. LA BRUYÈRE.

Corneille subjects us to his characters and to his ideas; Racine conforms himself to ours. That one (the former) paints men as they should be, this one (the latter) paints them as they are.

(4.) *Celui-ci, celle-ci, ceux-ci, celles-ci,* may be used absolutely in French in the sense of *this one, that one,* &c.:—

On la vit, toutes les semains, essuyer les larmes de *celui-ci*, pourvoir aux besoins de *celui-là*. FLÉCHIER.

Every week, she was seen wiping the tears of this one, providing for the wants of that one.

(5.) *Ceci* and *cela* are always used absolutely. They serve to point out things only. They can, of course, never be prefixed to a noun [§ 37, (5.)]:—

Tant que le jour est long, il gronde entre ses dents,
Fais *ceci*, fais *cela*, va, viens, monte, descends. REGNARD.

The livelong day he mutters between his teeth, do this, do that, go, come, go up, come down.

Je suis un peu surpris de tout *ceci*. MASSILLON.

I am a little surprised at all this.

Vous n'avez pu désavouer *cela*. PASCAL.

You have not been able to disavow that.

* The same adverbs produce the same difference in meaning with the demonstrative adjectives *ce, cet,* &c. They are not placed immediately after those adjectives, but after the nouns which they determine: cet homme-ci, *this man,* cet homme-là, *that man.* The commencement of Remark (3.) applies also to the adjectives *ce, cet, cette, ces,* &c.

LESSONS IN GEOLOGY.—No. XL.

By THOMAS W. JENKYN, D.D., F.R.G.S., F.G.S., &c.

CHAPTER III.

ON THE INFLUENCE OF ATMOSPHERIC AGENTS ON THE EARTH'S CRUST.

SECTION VII.—ON GLACIERS.

§ iii. ON THEIR TRANSPORTING POWER, AND ITS RESULTS ON THE EARTH'S SURFACE.

THE last lesson has shown that the glacier is, in its course, covered more or less with fragments of stone and masses of rock, which have either fallen from the sides of the cliff through weathering, or have been brought down by avalanches from the higher flanks of the mountain. All these blocks and ridges move downward with the glaciers, in the forms of lateral and medial moraines; which finally are deposited in one terminal moraine in the lower district where the glacier melts away.

The progress, which the slow but irresistible motion of the glacier makes, is marked by the distance to which enormous blocks of stone are carried, on its surface, in a given number of years. These blocks are so huge in size, and so remarkable in figure, that they cannot be confounded with other stones. By drawing a straight line from one of these blocks to either side of the cliffs of the valley, in a given year, and calculating the distance which they have gone downward in a future year, they mark the progress of the glacier as definitely as a log of floating wood tells the rapidity of a river.

Through the incessant operations of atmospheric agents, the sides of a promontory between two glaciers, as represented by fig. 89, in our last lesson, or fig. 90, in this, may yield a great stream of blocks in the course of years. When the ice is apparently stationary, immense heaps of debris accumulate on the surface of the glacier immediately at the base of cliffs on each side; but as the glacier advances, the entire accumulation is moved with it, until it deposits its charge in a terminal moraine.

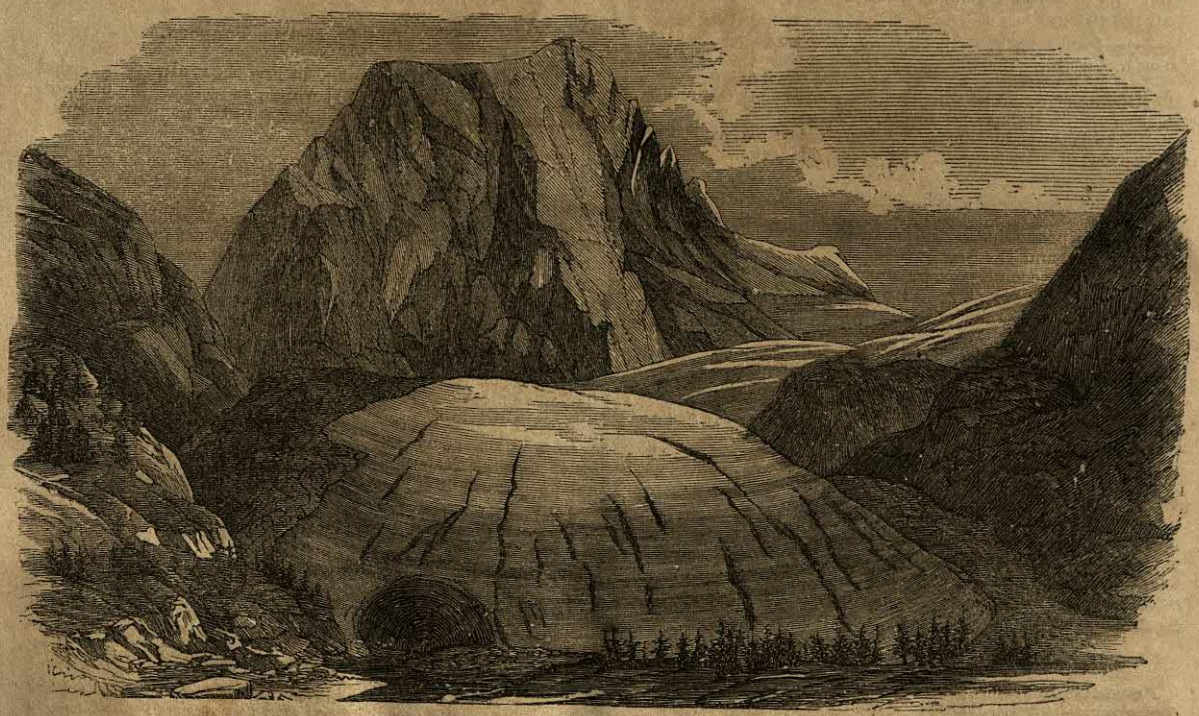


Fig. 90. *The Glacier of Arolla, on each side Mont Collon, in the Valley of Erin.*

When these blocks and fragments in the moraine are examined, they are found to indicate the lithological character of the high and inaccessible cliffs from which they have been brought down. By this means the geologist is supplied with specimens of rocks, that would be otherwise out of his reach. Professor J. Forbes gives us an instance of this; the *Gabbro* of Saas, which, though it has never yet been found *in situ*, or on its parent rock, is discharged by the glacier of Allalein, near Monte Rosa, in the Alps.

The slow but never ceasing progression of rocky masses transported by glaciers, is a study as striking to the imagination as it is suggestive to science. Suppose the length of a glacier to be twenty miles, and that it moves 500 feet every year. To-day you see a block falling from the melting front of a glacier. That block began its journey, at the upper end of the glacier, 200 years ago! Or suppose that in the high ravine of the Alps, you saw this year an immense block hurling down from a cliff at the upper end of such a glacier. That stone will not arrive at its resting-place in the terminal moraine below, till six generations of men have been swept away!

In this diagram the moraine *a* shows that the glacier had been at a higher level than it is at present, and had deposited there a portion of its stony charge. On account of the reflected heat from the cliffs, the sides of the glacier melt faster than the centre. At *b*, in consequence of the steepness of the cliff, the lateral moraine is engulphed between the ice and the rock. It is by this means that the surface of the cliff will become grooved or striated by the movement of the glacier. At *c* is a medial moraine, under which the glacier rises to a greater height than at its sides. The heap at *y* shows that the glacier, at a higher elevation, left a portion of its lateral moraine behind it on melting. At *x* a part of the moraine now on the surface is, as the ice goes on melting on that side, ready to slide, or to roll, to rest on a lower portion of the inclined bank.

It sometimes happens that two glaciers having separate sources in two high glens unite, just like two rivers, in a common valley lower down. The two flanks of the mountain, which form the promontory between them, may consist of rocks of different formations. The left moraine of one valley

Fig. 92. *A Glacier Table on the Mer de Glace of Chamouni in* 1842.

You have already seen that, in Alpine valleys, ridges of stony fragments are found at a higher level than that of the surface of the present glacier. In other districts also where there are no glaciers at present, similar ridges of stones and blocks are found. The coupling of these two facts together is of great importance in geological reasoning, as it supplies a good ground for inferring that, at some ancient epoch, glaciers existed in that district. Instances of this are found on the flanks of many hills, and on the ledges of many rocks in mountainous regions.

A little attention to the modes in which a glacier bears its charges of stones downwards, will help you to understand how lateral moraines are sometimes left behind at higher levels than the present surface of the ice, how part of the moraines come to be instruments of grooving and marking the sides of cliffs, and how the terminal moraine is made to consist of an accumulated heap, or of scattered fragments of rocks, widely different in mineralogical character. The annexed diagram, fig. 91, will assist your conception of these glacial phenomena.

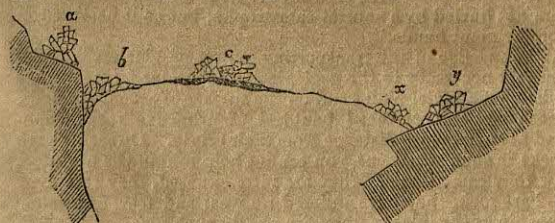


Fig. 91. *A Glacier having a precipitous Cliff on one side, and an inclined Bank on the other.*

and the right moraine of the other will, of course, meet at the point of the promontory, and form one medial moraine. But when they meet, they do not mingle their fragments confusedly. The debris, proper to each side of the rock, join each other, but they mark, by a band of stones, frequently for some miles, the actual separation of the two glaciers. Had it not been for the mineral difference in the sides of the moraine, we should have thought that, in that distance, the two glaciers would have become, like two streams, perfectly united.

Beside the lateral and medial moraines, there are frequently found, on the surface of a glacier, huge masses of rock which maintain a conspicuous pre-eminence over the other rocky fragments. These massive blocks do not, either by weight or heat, indent the surface of the glacier, but ride upon an icy knoll, ridge, or pedestal. A single block of this kind may cover a considerable surface of the glacier, and has every appearance of having been pushed or shot up by pressure from the sides or from below. This phenomenon is strikingly and faithfully represented by figure 92.

This glacier table is a magnificent slab of granite, measuring twenty-three feet in length, seventeen in breadth, and about three feet and a half in thickness. It appears as if it had been elevated above the level of the glacier, and seems supported by an elegant pedestal of icy marble beautifully veined.

To account for this apparent tendency of the ice to rise or to shoot up into a rude pedestal, wherever it is covered by a large block of stone, is one of the problems of glaciers. It is probable that what appears as an elevation, results only from the circumstance, that the surface of the glacier has, in reality, been depressed everywhere else by the melting action of sun and rain. The block or slab acts like an umbrella, and protects the ice from both heat and wet. The height, at which the slab or table is seen, measures the level to which the glacier

had previously attained, while all below that elevation has been melted and washed away. This depression along the surface of a glacier is sometimes very rapid, amounting occasionally to a foot per week in the summer. By this waste of the surface-ice all over the glacier sinks considerably in a warm season, while the space of ice immediately under the slab is preserved at its previous elevation.

If the heat of the summer be very great, these icy pedestals themselves will melt away all around, and become too feeble to sustain the weight of the enormous slab that had sheltered them. Eventually, the support of the pedestal gives way, and the block begins to slide, till it slips down to another part of the surface ice. As soon as it rests on the surface, it immediately recommences the operation of defending the ice below it from the action of sun and rain, and begins to rise or mount afresh, precisely on the same principles as before.

Moraines are found, not only at a higher elevation than the present surface of a glacier, but also at much lower distances than the present point of it. In such a case, the accumulated heaps, or the scattered debris, furnish good ground for the inference that the glacier once extended downward all that distance, and that, since that epoch, the glacier has retreated the whole of that length.

called the Vallais, on the shores of the lake of Geneva and many other places. Wherever they are found they are always indubitable proofs that, at some previous era in the history of our globe, such districts were covered by glaciers. The moraines found on the shores of the lake of Geneva, at the height of about a hundred yards above the level of the waters, prove clearly that once the glaciers of the Rhone extended forty or fifty miles lower down than they do now, and at a level from three to four thousand feet below the present ice-fields. The outward aspect of these moraine blocks, as found in different parts of the Alps, is well instanced in a heap of huge angular stones called the Pierre a Dzo, situated at Monthey, in the valley of the Rhone.

"The blocks of Monthey," says Professor J. Forbes, "must be seen to be appreciated. I wandered amongst them for a whole afternoon, and though I had previously heard much of their magnitude, I had formed no idea of what I then saw. We have here a belt or band of blocks, poised, as it were, on a mountain side, it may be 500 feet above the alluvial flat through which the Rhone winds below. This belt has no great vertical height, but extends for miles—yes, for miles along the mountain side, composed of blocks of granite of thirty, forty, fifty, and sixty feet in the side—not a few, but by hundreds,

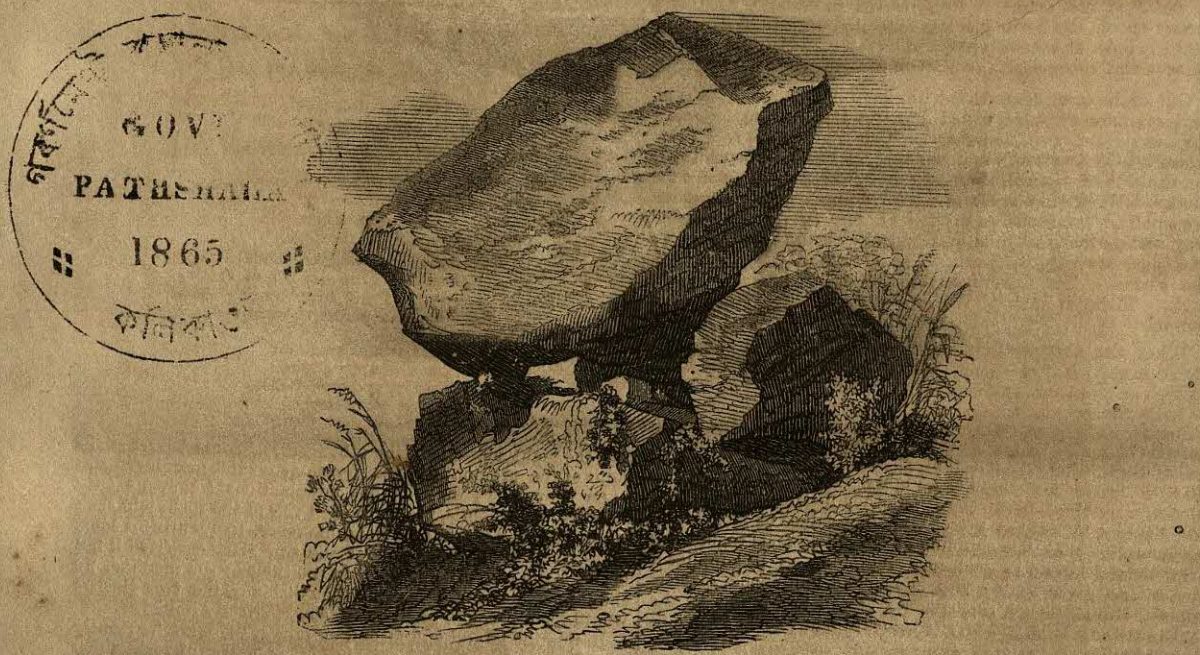


Fig. 93. *Moraine blocks called Pierre a Dzo, at Monthey.*

The amount of these deposited moraines, is an index to the force with which glaciers have acted in the disintegration of mountains and hills, and to the extent of change produced on the surface of the earth, by their agency in transporting blocks, and stones and gravel, and depositing them upon lower levels. In plains at the bottom of some Alpine valleys, and on the sides of some of the lower hills, the quantity of stones and gravel thus transported and deposited is immense. In the valley of the glacier of the Miage, there is a moraine which has been pushed out for several miles along its lower districts, and is several hundred feet in depth. When the sources of these debris are examined, it is found that all these masses of blocks, slabs, and stones have been dislodged and brought down from places that are now immense chasms or glens in the higher parts of the mountain. All these chasms have been scooped and hollowed out by the operations of the various agencies that combine to form glaciers.

Extensive moraines deposited by ancient glaciers are found in various parts of Switzerland, such as on the flanks of the Jura mountains, on the declivities of the hills in the district

fantastically balanced on the angles of one another, their grey, weather-beaten tops standing out in prominent relief from the verdant slopes of secondary formation on which they rest." "The blocks are piled one on another, the greater on the smaller, having deep recesses between them, in which the flocks or their shepherds seek shelter from the snow storm, and seem not hurled by a natural catastrophe, but as if balanced in sport by giant hands."

A knowledge of the transporting power of glaciers is indispensably necessary to the geological student, for he frequently finds upon alluvial plains and on the surface of secondary beds, vast masses and scratched boulders of primitive rocks, deposited at an immense distance from their origin. On seeing such blocks in such situations, you cannot help asking the question, how they came there? They are fully exposed, they rest upon the bare rock, they have suffered no wear and tear, and sometimes, in rocky places, they are put in such nice equilibrium, that had any water passed over them, they would necessarily have been removed. Often a block of granite, for instance, is found some hundred miles from any granite rock. What was

the power that transported it to that distance? Volcanic explosions could not have hurled them. Currents of water could not have borne such masses across lakes and up the sides of hills without blunting their sharp angles and pointed surfaces. Nor will the theory of floating icebergs account for all the circumstances in which these blocks are found distributed.

Professor Playfair was the first writer that regarded glaciers as geological agents in the transportation of blocks and boulders. "The immense quantity," he says, "and size of the rocks thus transported have been remarked with astonishment by every observer, and explain sufficiently how fragments of rock may be put in motion, even where there is but little declivity, and where the actual surface of the ground is considerably uneven. In this manner, before the valleys were cut out in the form they now are, and when the mountains were still more elevated, huge fragments of rock may have been carried to a great distance; and it is not wonderful if these same masses, greatly diminished in size, and reduced to gravel or sand, have reached the shores, or even the bottom of the sea."

When this hypothesis comes to be applied to the erratic blocks that lie on the plains of Switzerland, or rest on the sides of the Jura mountains, it involves the probability that, at a former epoch, the Swiss glaciers extended much farther than they do now, and even stretched across the present lake of Geneva and covered all the plain of Switzerland.

One of the most remarkable blocks of this description is an immense mass of stone, called Pierre à Bot, resting on one of the Jura hills near Neufchâtel. This Pierre à Bot, or toad-stone, lies in a belt of wood situated in the hollow of a hill. On the side of this hill, there rest many thousands of travelled blocks derived from rocks at a great distance, some of which are small and water-worn; others are large, about a yard each way, and perfectly angular and rugged, except that the corners and edges are slightly worn. The chief of all these blocks is the Pierre à Bot, fifty feet long, twenty wide, and forty high. There it stands, the evidence of some stupendous power.

What was the power that brought all these blocks and stones here? If it was moving water, why are these blocks at so high an elevation, and not buried rather in the lake of Neufchâtel? and why have they such slight marks of friction? If a floating iceberg was the power, where are the boundaries and barriers of such a lake or gulph to be found? The superficial soil of Switzerland is of such a character as to show that, no flood of water has passed over it after the time when these blocks were deposited. "A current of water," says Professor Playfair, "however powerful, could never have carried it up an acclivity, but would have deposited it in the first valley it came to, and would in a much less distance have rounded its angles, and given to it the shape so characteristic of stones subjected to the action of water A glacier which fills up valleys in its course, and which conveys rocks on its surface free from attrition, is the only agent we now see capable of transporting them to such a distance, without destroying that sharpness of the angles so distinctive of these masses."

This hypothesis of Professor Playfair has been admirably worked out by M. Venetz, who was the first geologist in Switzerland that applied it to the doctrine of glaciers extending the whole distance from the Alps to the Jura, as the only circumstance that could account for the transportation of such blocks. This application was powerfully supported by the illustrious geologists De Charpentier and Agassiz: but Agassiz has extended the application of this theory to every part of the temperate zone, and has employed it to account for the distribution of blocks in Sweden, Norway, and in Great Britain.

Professor J. Forbes has satisfactorily proved that glacier agency will account for the vast number and the peculiar positions of blocks and boulders, found either on the ledges of barren rocks, or in the alluvial valleys of mountainous districts. He shows that the quantity of rocky fragments that reach the surface of the glacier is frequently sufficient to conceal the entire mass of ice on which they are borne. "The lower parts of the glacier de Miage near Mont Blanc, and the glacier of Zmutt near Monte Rosa, are completely darkened by the quantity of rocks they transport. In many places in Switzerland, there are abundant evidences of the transporting power of glaciers. In some districts, glaciers have filled up entire valleys with stones, and have thereby formed lakes, as is instanced in the glaciers of Miage and of Allalein. Rocky masses, equal in dimensions to any blocks found in the ancient moraines, may be seen any day on the surface of existing glaciers. On the ice of the glacier of Viesch in the Vallais there is a block about 100 feet long, and forty or fifty feet high." A case in point is found in the valley of Saas, where an enormous block of green slate has been brought down by the glacier of Schwartzberg, and deposited about thirty years ago. This block rests now about half a mile from the frontage of the glacier, and the whole of that intervening distance is covered with erratic blocks, precisely as such fragments are found in the Jura, on Snowdon, and in the Highlands.

In concluding this section upon glaciers, you scarcely need to be reminded that the statements which have been made concerning erratic blocks, as found in Alpine districts, are not to be applied to the boulders and rounded stones that are found in what is called the DRIFT. This will be explained in our next lessons.

THE OLIVE LEAF.

(Tune—"*Ivy Green.*")

Oh, let me twine an olive leaf
About that garland fair;
And bind it round the human heart,
If blissful peace be there.
For o'er the world a change is come,
In happiness and love;
And men in brotherhood now join
More peaceful than the dove.

Hope on, hope on, the clouds of night,
Gleam with the rosy hue of Truth;
The sun of Peace with 'healing' light,
O'erspreads the earth with joyous youth.

The silver stars now shine above
The workman's happy home;
The flowery mead, and garden fair,
With pride his own become.
Now, o'er his hearth, does plenty rest,
And industry so blithe;
And where the cruel sword once hung,
Now hangs the peaceful scythe.

Hope on, &c.

That hallow'd spot, the flow'ry vale,
The haunt of youth and joy,
Is common ground, and o'er it skips
The mother's darling boy.
In his arm-chair, the ancient sire
Now sits at close of day;
From which that olive bud did spring,
With tender leaves so gay.

Hope on, &c.

The father, too, now sings that song—
Once sung by angels bright;
All nature joins the happy throng,
And echoes with its might.
Angels now linger on the earth,
And mark the peaceful flow
Of love and happiness around
The sons of men below.

Hope on, &c.

Truth boldly urges man to strike
The course mark'd out by right;
And knowledge teaches how to gain
The victory o'er might.
Oh! give me then the olive leaf,
Best symbol of the free;
The garland twin'd around the heart,
Source of felicity.

Hope on, &c.

JOHN FORD, Stratford, Essex.

LESSONS IN GERMAN PRONUNCIATION.—No. XII.

Die Biene.
Dee bee'-nai.

Eine kleine Biene flog
I'-nai kli'-nai bee'-nai flo'ch

Emſig hin und her und ſog
Em'-zich hin öönt hair öönt zo'ch

Süßigkeit aus allen Blumen.
Zü'-ssig-kite ouss ál'-len bloo'-men

Bienchen, ſpricht die Gärtnerin,
Been'-chen, ſpricht dee gherrt'-nai-rin,

Die ſie bei der Arbeit trifft,
Dee zee by dair ár'-bite trift,

Manche Blume hat auch Gift,
Mán'-chai bloo'-mai hát ouch gift,

Und du ſaugſt aus allen Blumen?
öönt doo zouchst ouss ál'-len bloo'-men?

Ja, ſpricht ſie zur Gärtnerin,
Yáh, ſpricht zee tsoor gherrt'-nai-rin,

Ja, das Gift laß ich darin!
Yáh, dáss gift láss ich dá-rin'!

VOCABULARY.

Biene, *f.* bee	Süßigkeit, *f.* sweetness
emſig, busily	Gärtner, *m.* gardener
hin und her, to and fro	manche, many, –a
ſaugen to suck	Gift, *n.* poison.

LESSONS IN GERMAN.—No. LXV.

§ 77. VERBS OF THE OLD CONJUGATION.

(Commonly called Irregular Verbs).

(1) In the Old Conjugation, the Imperfect Tense and the Perfect Participle are distinguished from the Present, chiefly by a change of the radical vowels. Thus, in some verbs, a different radical vowel is found in each of these three parts.

Present	*Imperfect.*	*Perfect Participle.*
Bitten, beg.	Bat, begged.	Gebeten, begged.
Helfen, help.	Half, helped.	Geholfen, helped.
Sinnen, reflect.	Sann, reflected.	Geſonnen, reflected.
Trinken, drink.	Trank, drank.	Getrunken, drunk.

When in the course of the changes noted in the text above, a long vowel or diphthong becomes *short*, the final consonant of the root is doubled, as:

Reiten, to ride.	Ritt, rode.	Geritten, ridden.
Leiden, to suffer.	Litt, suffered.	Gelitten, suffered.

In the case of Leiden, note also, that d is changed into its cognate t. When, on the other hand, a short vowel is thus made *long*, the second of two radical consonants is omitted: as,

Bitten, to beg;	Bat, begged;	Gebeten, begged.
Kommen, to come;	Kam, came;	Gekommen, come.

(2) In some, the vowel or diphthong in the Imperfect and the Participle, is the same, but is different from that in the Present: as,

Present.	*Imperfect.*	*Perfect Participle.*
Glimmen, glimmer	Glomm, glimmered.	Geglommen, glimmered
Heben, lift.	Hob, lifted.	Gehoben, lifted.
Klimmen, climb.	Klomm, climbed.	Geklommen, climbed.
Küren (kühren), choose.	Kor, chose.	Gekoren, chosen.
Leiden, suffer	Litt, suffered.	Gelitten, suffered.
Saugen, suck.	Sog, sucked.	Geſogen, sucked.
Schieben, shove	Schob, shoved.	Geſchoben, shoved
Schleichen, sneak	Schlich, sneaked.	Geſchlichen, sneaked.
Schnauben, snort.	Schnob, snorted.	Geſchnoben, snorted.
Schreiben, write.	Schrieb, wrote.	Geſchrieben, written.
Stieben, scatter.	Stob, scattered.	Geſtoben, scattered.
Treiben, drive.	Trieb, drove.	Getrieben, driven.
Trügen, betray.	Trog, betrayed.	Getrogen, betrayed.
Weben, weave.	Wob, wove.	Gewoben, woven.

(3) In others, the vowel or diphthong of the Present is changed in the Imperfect, but resumed in the Participle: as,

Present.	*Imperfect.*	*Perfect Participle.*
Blaſen, blow, (sound)	Blies, blew.	Geblaſen, blown.
Fallen, fall.	Fiel, fell.	Gefallen, fallen.
Fangen, catch.	Fing, caught.	Gefangen, caught.
Geben, give.	Gab, gave.	Gegeben, given.
Hangen, hang.	Hing, hung,	Gehangen, hung.
Kommen, come.	Kam, came.	Gekommen, come.
Laufen, run.	Lief, run.	Gelaufen, run.
Schaffen, create.	Schuf, created.	Geſchaffen, created.
Schlagen, beat.	Schlug, beat.	Geſchlagen, beaten.
Sehen, see	Sah, saw.	Geſehen, seen.
Stoßen, push.	Stieß, pushed.	Geſtoßen, pushed.
Treten, tread.	Trat, trod.	Getreten, trodden.

(4) Besides the vowel changes indicated above, verbs of the ancient Conjugation have the following characteristics:

a. The Perfect participle ends in e n or n, and is thereby distinguished from that of the New Form, which terminates in et, or t, thus:

Old Form.	*New Form.*
Geholf e n, helped; from Helfen	Gelob e t (gelobt), praised; from Loben.
Gefall e n, fallen; from Fallen.	Geliebet (geliebt) loved; from Lieben.
Getrag e n, borne; from Tragen.	Gelab e t (gelabt), quickened; from Laben.
Gebot e n, bidden; from Bieten.	Getauſch e t (getauſcht), exchanged; from Tauſchen.

b. Those having a in the *first* person singular of the Present Indicative, assume the Umlaut in the *second* and *third* persons; thus:

INDICATIVE.	INDICATIVE.
Present.	
ich fange, I catch,	ich ſchlage, I strike
du f ä n g ſt, thou catchest,	du ſ c h l ä g ſt, thou strikest,
er f ä n g t, he catches,	er ſ c h l ä g t, he strikes.
wir fangen, we catch,	wir ſchlagen, we strike.
ihr fangt, you catch,	ihr ſchlagt, you strike.
ſie fangen, they catch,	ſie ſchlagen, they strike.

c. Those having e (long) in the *first* person singular of the Present Indicative, take, in the *second* and *third* person, ie; those, in like manner, having e (short,) take in the same places, the vowel i; and in both instances, the Imperative (*second person singular*) adopts the vowel-form of the second person of the Indicative, thus:

INDICATIVE.	IMPERATIVE.
Present.	
ich leſe, I read.	
du l ie ſ e ſt, thou readest,	l ie s, du (for lieſe) read thou.
er l ie ſ e t, he reads,	leſe er, let him read.
wir leſen, we read,	leſen wir, let us read.
ihr leſet, you read,	leſet ihr, read ye or you.
ſie leſen, they read.	leſen ſie, let them read.
ich helfe, I help,	
du h i l f ſt, thou helpest,	h i l f du, (for hilfe), help thou.
er h i l f t, he helps,	helfe er, let him help.
wir helfen, we help,	helfen wir, let us help.
ihr helfet, you help,	helfet ihr, help ye or you.
ſie helfen, they help.	helfen ſie, let them help.

The verbs that thus adopt the vowel-form of the second person of the Indicative lose also the characteristic e final: giving, as above, lies, for leſe; hilf for hilfe, &c. It should be noted, further, that the unaccented e final, is, in other instances, also sometimes omitted.

d. The final e, of the *first* and *third* persons singular of the Imperfect Indicative, is always omitted, and in this tense the radical vowel, if it be capable of it, assumes the Umlaut in the Subjunctive thus:

INDICATIVE.	SUBJUNCTIVE.	INDICATIVE.	SUBJUNCTIVE.
Imperfect.		*Imperfect.*	
ich ſprach, (for ſprache) I spoke,	ich ſpräche, I might speak.	ich ſchlug, I struck,	ich ſchlüge, I might strike.
du ſprachſt, thou didst speak,	du ſprächeſt, thou mightst speak.	du ſchlugſt, thou didst strike,	du ſchlügeſt, thou mightst strike.
er ſprach, (for ſprache) he spoke,	er ſpräche, he might speak.	er ſchlug, he struck,	er ſchlüge, he might strike.
wir ſprachen, we spoke,	wir ſprächen, we might speak.	wir ſchlugen, we struck,	wir ſchlügen, we might strike.
ihr ſprachet, you spoke,	ihr ſprächet, you might speak.	ihr ſchluget, you struck,	ihr ſchlüget, you might strike.
ſie ſprachen, they spoke.	ſie ſprächen, they might speak.	ſie ſchlugen, they struck	ſie ſchlügen, they might strike.

§ 78. PARADIGM OF A VERB OF THE OLD FORM.

Schlagen, to strike.

	INDICATIVE.	SUBJUNCTIVE.	CONDITIONAL.	IMPERATIVE.	INFINITIVE.	PARTICIPLE.
	Present Tense.	*Present Tense.*		*Present Tense.*	*Present Tense.*	*Present.*
PLUR. SING. 1	ich ſchlage, I strike.	ich ſchlage, I may strike.		2. ſchlage du, strike thou.	ſchlagen, to strike.	ſchlagend, striking.
PLUR. SING. 2	du ſchlägſt, thou strikest.	du ſchlageſt, thou mayst strike.		3. ſchlage er, let him strike.		
PLUR. SING. 3	er ſchlägt, he strikes.	er ſchlage, he may strike.		1. ſchlagen wir, let us strike.		
PLUR. 1	wir ſchlagen, we strike.	wir ſchlagen, we may strike.		2. ſchlaget ihr, strike ye.		
PLUR. 2	ihr ſchlaget, you strike.	ihr ſchlaget, you may strike.		3. ſchlagen ſie, let them strike.		
PLUR. 3	ſie ſchlagen, they strike.	ſie ſchlagen, they may strike.				
	Imperfect Tense.	*Imperfect Tense.*				
PLUR. SING. 1	ich ſchlug, I struck.	ich ſchlüge, I might strike.				
PLUR. SING. 2	du ſchlugſt, thou didst strike.	du ſchlügeſt, thou mightst strike.				
PLUR. SING. 3	er ſchlug, he struck.	er ſchlüge, he might strike.				
PLUR. 1	wir ſchlugen, we struck.	wir ſchlügen, we might strike.				
PLUR. 2	ihr ſchluget, you struck.	ihr ſchlüget, you might strike.				
PLUR. 3	ſie ſchlugen, they struck.	ſie ſchlügen, they might strike.				
	Perfect Tense.	*Perfect Tense.*			*Perfect Tense.*	*Perfect.*
PLUR. SING. 1	ich habe geſchlagen, I have	ich habe geſchlagen, I may have			geſchlagen haben, to have struck.	geſchlagen, struck.
PLUR. SING. 2	du haſt geſchlagen, struck, &c.	du habeſt geſchlagen, struck, &c.				
PLUR. SING. 3	er hat geſchlagen,	er habe geſchlagen,				
PLUR. 1	wir haben geſchlagen,	wir haben geſchlagen,				
PLUR. 2	ihr habet geſchlagen,	ihr habet geſchlagen,				
PLUR. 3	ſie haben geſchlagen,	ſie haben geſchlagen,				
	Pluperfect Tense.	*Pluperfect Tense.*				
PLUR. SING. 1	ich hatte geſchlagen, I had	ich hätte geſchlagen, I might have				
PLUR. SING. 2	du hatteſt geſchlagen, struck, &c.	du hätteſt geſchlagen, struck, &c.				
PLUR. SING. 3	er hatte geſchlagen,	er hätte geſchlagen,				
PLUR. 1	wir hatten geſchlagen,	wir hätten geſchlagen,				
PLUR. 2	ihr hattet geſchlagen,	ihr hättet geſchlagen,				
PLUR. 3	ſie hatten geſchlagen,	ſie hätten geſchlagen,				
	First Future Tense.	*First Future Tense.*	*First Future.*		*First Future.*	
PLUR. SING. 1	ich werde ſchlagen, I shall	ich werde ſchlagen, (if) I shall	ich würde, du würdeſt, er würde, wir würden, ihr würdet, ſie würden ſchlagen, I should strike &c.		ſchlagen werden, to be about to strike.	
PLUR. SING. 2	du wirſt ſchlagen, strike, &c.	du werdeſt ſchlagen, strike, &c.				
PLUR. SING. 3	er wird ſchlagen,	er werde ſchlagen,				
PLUR. 1	wir werden ſchlagen,	wir werden ſchlagen,				
PLUR. 2	ihr werdet ſchlagen,	ihr werdet ſchlagen,				
PLUR. 3	ſie werden ſchlagen,	ſie werden ſchlagen,				
	Second Future Tense.	*Second Future Tense.*	*Second Future.*			
PLUR. SING. 1	ich werde, du wirſt, er wird, wir werden, ihr werdet, ſie werden geſchlagen haben, I shall have struck, &c.	ich werde, du werdeſt, er werde, wir werden, ihr werdet, ſie werden geſchlagen haben, (if) I shall have struck, &c.	ich würde, du würdeſt, er würde, wir würden, ihr würdet, ſie würden geſchlagen haben, I should have struck, &c.			

A KEY TO THE EXERCISES IN THE LATIN LESSONS.

By JOHN R. BEARD, D.D.

(*Continued from page* 315, *Vol. III.*)

Page 244, vol. II.—ENGLISH-LATIN.

Bear aid to the wretched and needy person; compare our longest life with eternity, and it will appear very short; it is uncertain what each day and night may bring; apply to that care and thought which may bring to thee the highest dignity and glory; use teaches how to bear labour; it is sordid to prefer money to friendship; in proportion as each person refers whatever he does to his own advantage, so is he least a good man (so is he farthest from being a good man); [the comma should be after agit, not after refert]; it is necessary for a good citizen to prefer the dignity of the republic to all hi sown advantages; this is a part of a good teacher, to see to what his natural character inclines each (pupil); Aristides died in such poverty that he scarcely left enough to bury him (to pay the expenses of his funeral); the poets relate that the giants made war on the gods; Socrates bore back home the same countenance which he bore from home (left home with); Verres took away (plundered) all the gold, all the silver, and all the ornaments that were in the cities of Sicily; many have removed (destroyed) even the vice (the bad qualities) of their nature by meditation and effort; piety toward God being destroyed, the confidence and intercourse of the human race is also destroyed;

have not they who deny that God exists utterly destroyed all religion? affection and benevolence being destroyed, all pleasure is taken from life.

Page 244, vol. II.—LATIN-ENGLISH.

Confer stultitiam tuam cum patris sapientiâ; meum peccatum cum Dei bonitate contuli; parva cum magnis conferam; malorum tuli molem; malorum moles a me lata est; gigantes sustulisse montes feruntur; quid ferat dies mihi est incertum; aequo animo fer laborem; ne omnia ad tuum commodum refer; quod auri, quod argenti habui abstulit hostis; caritate subtatâ, sublata est omnis domi jucunditas; vitiumne naturae meditatione potes tollere? ne fidem et vitae societatem tollas.

Page 244, vol. II.—ENGLISH-LATIN.

He who wishes his virtue to be published, labours not for virtue but glory; do not poets wish to be celebrated after death? I, an old man, do not wish for the same things as I wished for (when) a youth; love if thou desirest to be loved; we must enjoy the good of the mind (mental good) if we wish to be happy; he is teachable who is willing to listen attentively; all benefits wish to (should) be placed in the light; if you are willing to be earnest and diligent, you will often find great instruction in little things; you ought to make him attentive whom you wish to make teachable; thus let us live with an inferior as we would wish a superior to live with us; well did Socrates say that this was the readiest way to glory, for every one to make it his object to be what he wished to be accounted; whoever shall wish to gain true glory, will be under an obligation to discharge the duties of virtue; we are unwilling to grow weary in preserving good men; men do not like that the same person should excel in many things; do not take seriously what I may have said in jest; I am free in my judgment, and in no way bound by a necessity of the kind, that, whether I will or not, I must maintain my opinion unchanged; Socrates refused to be conducted out of prison when he might easily have been; I would rather be Phidias than the best carpenter; do you prefer that the strength of your body or of your mind should be increased? one person wishes to excel in one virtue, another in another; to those with whom it is a fixed determination to prefer nothing to being good men, every other lesson is easy; woe to you who rather pursue riches than virtue; we prefer being content with little with virtue, to having much without virtue; Aristides, the Athenian, preferred being to appearing good.

Page 244, vol. II.—LATIN-ENGLISH.

Sapientes esse volunt; virtutem quam divitias habere malunt; in luxuriâ excellere nolis; in virtute excellere volo; visne mecum ambulare? mallem hunc librum legere; domum ire voluerunt; quod dicere voles nolet audire; optimos legat libros si quis doctus fiere vult; eundem scientiam, divitias et potentiam habere nolunt homines; scientiam quam divitias malim; sapiens quam dives esse malo; pauci sapientiam quam potentiam malunt.

Æsop's Fables.

THE TRAVELLERS AND THE ASS.

Two persons who were journeying together having observed an ass wandering in a desert place, ran toward it in joy, and each began to claim it as his own because he was the first to see it. But while they contend and dispute, and even fall to blows, the ass escapes, and neither of them gets possession of it.

THE RAVEN AND THE WOLVES.

A raven required from the wolves a part of their booty because he had accompanied them all the day. To whom (in reply) they say: "You have not followed (sectatus) us but the game, and that with this intention, namely, not to spare our bodies if they should be wearied out."—In actions it is proper to consider not what is done, but with what intention it is done.

THE SHEPHERDS AND THE WOLF.

Some shepherds having killed a sheep, were enjoying a feast. When a wolf saw this, he said: "Poor me! if I had carried off a lamb, what a noise would have been made." Then one of the shepherds replied: "Yes, and with reason, for it is our own not another man's sheep that we feed upon."

A TRUMPETER.

A trumpeter being taken by the enemy, said: "Do not slay me, for I am unarmed, nor have I anything except this trumpet." The enemy replied: "On that very account we will put thee to death, because, being unskilled yourself in fighting, you are accustomed to incite others to battle."—The fable shows that not only evil-doers should be punished, but also those who stir up others to do evil.

THE HAWKS AND THE DOVES.

The hawks at one time waged deadly war on each other. The doves, trying to bring them back to friendship, effected a peace between them. The peace being established, the hawks turned their strength against the doves.—This fable shows that the disagreements of the powerful are often of service to the weak

Page 260, vol. II.—ENGLISH-LATIN.

Those who come to us at an unseasonable time are often troublesome; we pass over many things which lie under our eyes; swallows depart in the winter months; a mortal body must at some time perish; the innocent sometimes perish; who can deny it? however, more often the guilty perish; all men ought to strive with their utmost power not to pass their lives in silence (sloth); who can doubt that a great man may arise out of a cottage? audacity and rashness must be opposed late rather than not at all; in joy all the citizens went to meet the soldiers who were returning home from war; if it had been so arranged by nature that men in their sleep should do the things which they dream, all who went to bed would have to be put in bonds; the ancients were deeply convinced that there is feeling in death, and that man, on departing from life, is not so blotted out as to perish utterly; Themistocles sought a narrow pass to prevent his being surrounded by the enemy; Romulus was thought to have gone to the gods; Augustus died in the seventy-sixth year of his age; I never could persuade myself that minds live while they are in mortal bodies, but when they have departed from them, die; all past time has perished; when I return from the country I will forthwith visit thee; Pompey, and many other famous men, perished shockingly; go whither the fates call thee; Hercules has gone to the gods; never would he have gone, unless he had prepared the way for himself while he was among men; a very deep sea washed the walls of the towers of the city.

Page 260, vol. II.—LATIN-ENGLISH.

Intempestive ad me venerunt; haud intempestive ad avunculum ibo; librum ante oculos positum transii; boni moriuntur, non pereunt; nunquam peribunt boni; quis dubitat quin magni e casis viri exire possint? ne vitam in silentio transeas tibi sit curae; turpitudini obviam eundum est tibi; urbem adierunt; quum redierint, tuam ad domum venient; Romulus ad deos transisse dicitur; anne credis Romulus ad deos transisse? parentibus obviam ituri sunt liberi; ne circumeatur curat dux; ne militum multitudine circumeatur urbs vereor; irent; issent; ibo; ibisne? patre redeunte, domum adibat; ivissem; domum mihi eundum est; a patre meo eundum est obviam civibus; cubitum iturus sum; me iturum esse cubitum haud scis? cubitum iverunt.

Page 261, vol. II.—ENGLISH-LATIN.

We are unable to look at the sun; this is the force of what is becoming, that it cannot be sundered from what is honourable; laughter sometimes breaks forth so suddenly that we are unable to restrain it though desiring so to do; say whether you can go with me or not; when the enemy were unable to put our army to the rout, they betook themselves into their fortified camp; when the general was unable to hold back the soldiers by prayers, he resolved to make use of force; often unskilful physicians make ulcerous what they are unable to cure; when Demosthenes was unable to pronounce the letter *r*, he succeeded by practice in becoming able to utter it very distinctly; reflect that an enemy may become a friend; no one becomes good by chance; if all things happen by fate, nothing can admonish us to become more cautious; no one has become immortal by sloth; it makes a very great difference whether an injury has been done through a certain disturbance of mind which is for the most part brief, or intentionally and advisedly; what a man sees frequently he does not admire, though he is ignorant by what means it is produced; we have not been produced by nature so as to appear made for play and joke (jocum), but rather for seriousness and for certain grave and important pursuits; thou becomest wise as old age approaches; I deny that there is such a thing as fortune (chance), and I say that from all eternity all things that are and all that will be are foreordained by fate; on what account did you say, that all things which are, or which will be, are held bound by fate; it may happen that a person may think correctly, and yet be unable to utter elegantly what he thinks.

Page 261, vol. II.—LATIN-ENGLISH.

Solem adversum intueri nequeunt homines; virtutes ita inter se junctae sunt ut separari nequeant; saepe risum, quamvis velimus, nequimus retinere; dic utrum queas an nequeas nobiscum ire; multi sunt morbi qui sanari nequeant; rhone dicere Demosthenes potest? rho dicere nequeo; exercitatione ut rho dicere queam fore spero; disce diligenter si doctus fieri vis; ex amico inimicus saepe fit; nec boni mali casu fiunt homines; si fortunâ omnia fierent, inutilis esset prudentia; ignaviâne ullum immortalem fieri putes? senectute sapientiores fiunt homines; incerti erant aliqui philosophi omniane fato fierent; nihil fato fieri mihi est persuasum.

Page 277, vol. II.—English-Latin.

Those things are opposites of which the one (altĕrum) affirms (what) the other denies; Cato declared that he wondered that the soothsayers did not laugh when they looked at each other; a sow, as they say, teaches Minerva; thou affirmest, I deny; Epicurus denies that any one who does not live honourably can live happily, as if I cared as to what he affirms or denies; this I seek to know, namely, what it is suitable for him to say who thinks the highest good (of life) to be in pleasure; whether you affirm or deny this, I shall maintain my (meam) opinion; things that deny are the opposites of those which affirm; dost thou say (ain) so? when you have laid open and brought to light the most hidden things, will you deny that there is any other thing that can be known? dost thou say yes? I say yes; dost thou deny? I deny; the husbandman plants trees which may be of service to another age, as says the speaker in Menander's Comedy; we do not believe, you say, those things to be true which we say; but thou, thou sayest, wilt never be troublesome to me; is not my friend, you will say, a handsome man? well has Plato said that he is happy whose lot it is to be able, even in old age, to learn the opinions of sages and true opinions; we will remember that even towards the lowest justice must be observed; the mind remembers past things, discerns present things, foresees future things; he ought to remember benefits on whom they have been conferred, and (he ought) not to make mention of them who has conferred them; always bear that in mind; the sage who is unable to do good to himself, is wise to no purpose; I will remember what you have so well said to me; those who remember the benefits received from their native land, will always be ready to take up arms on behalf of its safety; remember to die (death); all hate him who is unmindful of a favour; it cannot be that I should not hate the enemies of liberty; the envious hate another's virtue and happiness; virtue must of necessity spurn and hate things contrary to itself; the good we love, the bad we hate; I doubt not that the wicked hate me; a dire and abominable speech, "Let them hate provided they fear;" Cicero thoroughly hated Clodius; a judge ought not to favour any one, nor to hate (any one), nor to be angry (with any one); we ought not to love in such a way as if we were likely sometime to hate; the Romans thoroughly hated the name of kings; a good beginning is half the undertaking; oracles vanished when men began to be less credulous; after riches began to be accounted honours, and glory [insert comma] command, power followed them, valour began to decline, and poverty to be held a disgrace; it is shameful to finish ill a thing well commenced; they began on all sides to throw stones against the wall; they began to besiege the city; he worships who knows God; nothing seems to me more foolish than to think him whom thou knowest not thy friend; he who knows himself will feel that he has something divine, and will always do and aspire to something worthy of so great a favour from God; let every one pursue the art with which he is familiar.

Page 277, vol. II.—Latin-English.

Quod tu ais id ego nego; quum aio, ait, quum nego, negat; reliquisti, aiunt, urbem; utrum aias an neges ignoro; aientia negantibus sunt contraria; pater tuus, aiunt, Romam redibit; dulce et decorum est, inquit Horatius, pro patriâ mori; nunquam molestus, inquis, mihi est amicus; beneficiorum collatorum oblivisearis, beneficiorum acceptorum memineris; tui absentis meminero; si beneficiorum a parentibus in nos collatorum meminerimus, nunquam erga eos erimus ingrati; quamdiu doctorum meorum bonam doctrinam memini, me occupat desiderium illorum praestantium virorum; qui immemores sunt beneficiorum odimus; quis est qui non oderit libertatis inimicos? cur non oderint ignoramus; fortes amant homines et ignavos oderunt; non dubito quin me mali oderint; non est mihi gratus amicus qui ita amat ut si aliquando osurus sit; regium nomen perosum esse Romanis constat; infelix est quem oderunt omnes boni; rem bene coepisti sed finivisti male; vix milites munire castra coeperant quum hostes sunt visi; jam hostes expugnare urbem coeperant, quum repente nostri milites civibus auxilio succurrerunt; an tu noris amicum meum ignoro; amares amicum meum si novisses.

Æsop's Fables.

The Fox and the Grapes.

A fox seeing a bunch of grapes on a vine, jumped up at it with all her might, hoping to be able to reach it. Worn out at length with the fruitless effort, she departed, saying: "Well, they are yet sour, and I would not pick them up if I met with them in the street."—This fable shows that many despise those things which they despair of attaining (assequi).

The Fox and the Lioness.

A female fox reproached a lioness with the fact that she produced only one cub at a birth; to whom she is said to have answered: "Yes, one, but that one is a lion."—This fable shows that not the abundance but the goodness of things should be estimated.

The Mice.

Some mice once held a council as to how they should avoid the cat. After many proposals, it was unanimously resolved to hang a bell to her neck; for so they being warned by the sound, would be able to fly from her. But when the question arose as to who should fasten the bell on the cat, no one offered himself.—The fable teaches that many are daring in advice but timid in the crisis of action.

Page 307, vol. II.—English-Latin.

To do right is the interest of all; it thunders without lightning by night rather than by day; and now it began to grow light and all things were under (their) eyes; all things are becoming known; it grew dark and they knew not the road; I am weary of your talk; what does it matter to us that Antony has been conquered? when now it had grown dark; O my mother, I am sorry for thee, I am grieved for myself; it much concerns a teacher that his scholars should apply to learning with the greatest zeal; I am greatly concerned to see thee; how suddenly, how swiftly, how terribly it thundered; the corn is not cut down before the frost came; it rained milk; to live happily is every one's interest; we have it written in our archives that it is impious to hold the national assembly while it thunders and lightens; it snowed arrows, balls, and stones; it will rain to-day, I think; all that time during which (quo) it rains and snows; it is a rainy day; sometimes it snows let us go, the day already dawns; there are men who are neither ashamed nor wearied of their lust; Pompey himself is weary and very sorry; I am ashamed and grieved at myself; I am indeed grieved and ashamed at my brother; it is the part of a sage to do nothing of which he can have to repent; when Alexander had killed Clitus he could scarcely keep his hands from himself, so great was his sorrow; as if it were not only proper but necessary that it should be so; there are things which, even if lawful, one ought not to do; add, if you will, velocity; what pleases you pleases me.

Page 307, vol. II.—Latin-English.

Meorum peccatorum me poenitet; vitae eum taedet; vitaene eum taedet? illos vitae non taedet; omnium hoc interest; tuâ ac meâ hoc interest; nostrâne interest? sermonis nostri eos taedet; vesperascit; pluit; pluitne? grandinat; fulgurat; tonat; pluet totum per diem; ningit; pluit sanguinem; abi domum, nam vesperascit; libidinum eos poenitet; fratris tui me piget; Alexandrum interempti Cliti amici poenituit; te tuorum peccatorum oportet poenitere; omnium interest benefacere; matrem meam poenitet et taedet; curritur; ridetur; ignaviaene tuae te poenitet? illos ignaviae poenitet; benefacere mihi lubet; libetne tibi legere librum? patrem matremque amare est decorum; turpe est mentiri; illud te fallit; melius est mori honeste quam turpiter vivere; hocne te fallet?

SOLUTION OF PROBLEMS AND QUERIES.

Solution of the question about Bacchus and Silenus, p. 224, col. 1, in which $\frac{2}{3}$ is a misprint for $\frac{2}{5}$.

Let x and y denote the number of hours which Bacchus and Silenus respectively take to empty the cask. Then, by the question, $\frac{2}{3}y$ is the *time* during which Bacchus drank while Silenus was asleep; now denoting the whole cask by unity or 1, we have the following proportion $x : \frac{2}{3}y :: 1 : \frac{2y}{3x}$; the fourth term of which is the *part* of the cask which Bacchus drank while Silenus was asleep. Subtracting this from unity, we have $1 - \frac{2y}{3x}$ for the remaining *part* of the cask which Silenus drank when he awoke; and consequently we have the proportion, $1 : 1 - \frac{2y}{3x} :: y : y - \frac{2y^2}{3x}$; the fourth term of which is the *time* which Silenus took to drink the remainder of the cask.

But had they both drank together, Bacchus would have drank a *part* denoted by *half* of $\left(1 - \frac{2y}{3x}\right)$ or $\frac{1}{2} - \frac{y}{3x}$; and, of course, Silenus would have drank a *part* denoted by $1 - \left(\frac{1}{2} - \frac{y}{3x}\right)$ or $\frac{1}{2} + \frac{y}{3x}$. But by the question, we have

$1 : \frac{1}{2} - \frac{y}{3x} :: x : \frac{x}{2} - \frac{y}{3}$; the fourth term of which is the *time* that Bacchus took to drink his *part*; and $1 : \frac{1}{2} + \frac{y}{3x} :: y : \frac{y}{2} + \frac{y^2}{3x}$; the fourth term of which is the *time* that Silenus took to drink his *part*; but as they both drank together, these *times* are equal; whence, we have $\frac{x}{2} - \frac{y}{3} = \frac{y}{2} + \frac{y^2}{3x}$, or $2y^2 + 5xy = 3x^2$ (A). Now the *time* which they took when drinking *separately*, was $\frac{2}{3}y + y - \frac{2y^2}{3x}$; and when drinking *together*, was $\frac{x}{2} - \frac{y}{3}$; whence we have, by the question, $\frac{2}{3}y + y - \frac{2y^2}{3x} = \frac{x}{2} - \frac{y}{3} + 2$, or $12xy - 4y^2 = 3x^2 + 12x$ (B). From (A), we have $3x^2 - 5yx = 2y^2$, and by quadratics, $x = 2y$. By substituting this value of x in (B), we have $8y^2 = 24y$; whence $y = 3$; consequently, $x = 6$. Therefore, Bacchus would take 6 hours to finish the cask by himself, and Silenus would take 3 hours. Ans.

The following is the solution of Beppo's question, p. 284, col. 1, by PETER SIMPLE, Fleet-street:—

	£	s.	d.
345 loads of oak at £7 9s. 6d. cost	2,578	17	6
two-thirds of which is	1,719	5	0
Now 11 loads of pine at £3 15 are worth	41	5	0
and 3 loads of teak at £12 5s. are worth	36	15	0
which together are worth	£78	0	0

But £78 is contained $22\frac{1}{24}$ times in £1,719 5s.; therefore we must have

	£	s.	d.
$11 \times 22\frac{1}{24} = 242\frac{11}{24}$ loads of pine at £3 15s., worth	909	4	$4\frac{1}{2}$
and $3 \times 22\frac{1}{24} = 66\frac{1}{8}$ loads of teak at £12 5s., worth	810	0	$7\frac{1}{2}$
Which together are worth	£1,719	5	0*

* Solved also by D. F. G., Kilmarnock, and J. Lovett, Ashfordby.

LESSONS IN MECHANICS.—No. XXVIII.

WHEEL WORK.

SCARCELY any kind of machinery can be constructed without wheels. Wheels are of various kinds, and are employed to serve numberless purposes. A fly-wheel, from its size and weight, produces a continuous and nearly uniform motion. One wheel is made to drive another, most usually, by means of *cogs*, or *teeth*; and the relative position of these gives rise to the terms spur, crown, and bevel wheel. The *spur* wheel has its teeth on the edge of its rim—that is, they are prolongations of its radii; the *crown* wheel has its teeth on the side of its rim—that is, they are perpendicular to its face; and the *bevel* wheel has its teeth in an intermediate position. A large wheel will move a small one with a greater velocity than its own: thus, a wheel with forty teeth will cause one with twenty to make two revolutions, while it makes but one. On the contrary, a small wheel will move a large one with a less velocity than its own; but the less the velocity of the wheel which is driven, the greater its power, and *vice versâ*.

CHANGE OF THE DIRECTION OF MOTION.

The motion imparted by one spur wheel to another is necessarily in the same plane: sometimes, however, it is necessary to produce motion in a *different* plane—for instance, to make a shaft at one side of a room move a shaft at an adjoining side. To effect this several means may be used: thus, a crown wheel on one shaft, and a spur wheel on the other, &c. But the best, and by far the most usual, is the employment of two bevel wheels, which may be made, if necessary, to alter the velocity, by making them of unequal size.

RATCHET WHEEL.

A *ratchet* and *ratchet wheel* are used to prevent machinery from moving in some particular direction, which might be injurious or dangerous, while it allows it to move freely in the opposite. For this purpose, the teeth of the ratchet wheel are turned in one direction, so that the ratchet (a bar turning on one of its extremities) may, by its own weight, fall firmly against them, as they pass successively under it, during the revolution of the ratchet wheel, which, as well as the machinery in connection with it, is prevented from revolving in one direction, though not in the other.

Without adverting further to the various forms of wheels in use, and the different purposes which they are made to answer, we proceed to notice how they are used in mills, or rather the motive powers which are employed in putting the machinery of a mill in motion.

MILLS.

The operation of grinding is performed between two stones; and the more perfect the adjustment of the machinery used, the more satisfactory is the result.

HAND-MILLS.

The savage grinds his corn between two stones by simply rubbing them together. The hand-mill was the first step of progress, and it brought with it considerable improvement, as it gave certainty and equality to the pressure. Such mills as these are of very high antiquity. In the book of Exodus we read, "All the first-born in Egypt shall die, from the first-born of Pharaoh that sitteth upon the throne, even unto the first-born of the maid-servant that is behind the mill." The law of Moses, with admirable wisdom and exemplary kindness, decreed that no man should take the nether or the upper millstone to pledge, "for he taketh a man's life to pledge." The mill common among the Hebrews of the Mosaic period differed little from that which is in use to this day throughout Western Asia and Northern Africa. It consisted of two circular stones, two feet in diameter and half a foot thick. The lower was called the nether millstone, and the upper the rider. The former was usually fixed to the floor, and had a slight elevation in the centre—that is to say, was slightly convex in the upper surface. The upper stone had a concavity in its under surface, fitting to, or receiving the convexity of the lower stone. There was a hole at the top, through which the corn was introduced by handfuls at a time. The upper stone had an upright stick fixed in it as a handle, by which it was made to turn upon the lower stone, and by this action the corn was ground, and came out at the edges. These ancient mills were commonly turned by two persons, who sat opposite to each other. One took hold of the mill handle and impelled it half way round, the other then seized it and completed the revolution. This species of grinding is still practised in the East. There the trade of the miller is altogether unknown, the hand-mill being in general use. These hand-mills do not differ in any considerable degree from the Highland and Irish *quern*, and are the obvious resource in those remote quarters where a population is too thin or too scattered to afford employment for a miller. Hand-mills are mentioned in the "Odyssey," and were common in ancient Rome.

MOTIVE POWER.

The power by which the machinery is set in motion may be—as we see it among the rudest nations, and in our common tread-wheel—sheer manual labour; wind, however, is often employed, and our picturesque windmills, studded all over the country and freely introduced in paintings, are familiar to us all; water is also employed as a motive power; and most potent of all, steam.

ANSWERS TO CORRESPONDENTS.

COSMOPOLITE.—Our "Lessons on Natural Philosophy," as well as our "Lessons on Chemistry," will be very useful to you. We advise you to study them carefully.

W. W.—The Examination Papers in connection with the London University, given in our pages, are quite accurate for the session of 1862-3.

YOUNG CHEMIST.—Gun cotton is formed by immersing cleaned cotton in a mixture of sulphuric and nitric acids; by the action of the acids the vegetable fibre becomes charged with an explosive compound. You must be very cautious how you deal with it.

A CORRESPONDENT.—1. Yes. 2. Quite right as to the harmonicon. Our correspondent says a good cement for fastening the glass is made by dissolving shell lac in wood naphtha. It must be kept in a close stoppered bottle.

QUÆSITER: Spanish lessons will commence in No. 134; Italian lessons will commence in No. 79. Your handwriting is excellent.—A WORKING LAD: Practice will overcome the difficulty which you experience: the plan given for holding the pen is the best we know of for securing facility and elegance; but if you find it inconvenient, we advise you to try a method more easy to yourself. As it is, your penmanship is very cramped.—X. Y. Z.: You may obtain our "Elements of Political Economy" for 2s.; post free, 2s. 4d.

LESSONS IN GEOGRAPHY.—No. XXX.

MAP OF POLYNESIA.

Polynesia, as the name implies, signifies *many islands*, and consists of New Zealand and the numerous smaller islands which are found scattered here and there, in groups of various forms and sizes, over the vast expanse of the great Pacific Ocean. With the exception of New Zealand, which lies in the South Temperate Zone, by far the greater part of the Polynesian groups lie within the Torrid Zone; but the whole of Polynesia is included in a zone extending in Lat. from about 30° N. to about 50° S., and in Long. from about 130° E. to about 100° W., forming a basin whose breadth is about 5,600 miles, and whose greatest length is about 9,000 miles. The principal groups contained in this basin are the New Zealand group, consisting of two large islands, a smaller one, and several islets; the Auckland Islands, the Chatham Islands, the Friendly Islands, the Hervey Islands, the Society Islands, the Austral Islands, the Low Archipelago, the Marquesas Islands, the Samoa or Navigator's Islands, and the islands lying between the two latter groups; the Feejee Islands, the Gilbert Islands, and the islands lying between the two latter groups; the Caroline Islands, the Ladrone Islands, the Sandwich Islands, and the islands lying between these two latter groups; with many detached islands not formed into groups, as Pitcairn's Island, Ducie's Island, &c.

New Zealand lies to the south-east of Australia, at the distance of about 1,400 miles; and it is surrounded on all sides by the Pacific Ocean. The most northerly point of this group is North Cape, in Lat. 34° 29′ S. and Long. 172° 49′ E.; the most southerly southern point in Lat. 47° 13′ S. and Long. 167° 27′ E.; the most easterly, Cape East, in Lat. 37° 45′ S. and Long. 178° 36′ E.; and the most westerly, Cape West, in Lat. 45° 54′ S. and Long. 166° 10′ E. The native names of the two large islands are Ahinamaui and Tewaipounamu; the colonial names of these are New Ulster, New Munster, and of the smaller one New Leinster; otherwise, they are denominated the North, Middle, and South Islands of New Zealand. The North and Middle Islands are separated by a channel called Cook's Strait; and the Middle and South Islands by Foveaux Strait. The surface of North Island is reckoned about 54,000 square miles; of Middle Island, about 45,000 square miles; and of South Island, about 900 square miles; making in all a surface of 99,900 square miles; New Zealand, therefore, is larger than Great Britain by about 12,000 miles; but being situated nearer to the equator, its climate must (other things being equal) be deemed superior to that of our native country.

As to the *inlets* of the sea in this group of islands, which nearly correspond to the antipodes (i.e., *people* whose feet are exactly opposite to ours, when they stand on the surface of the earth) of Great Britain, there are the *Bay* of Islands, the Gulf of Hauraki, the Bay of Plenty, and Hawke's Bay, on the east coast of North Island; in Cook's Strait, east side, are Palliser Bay, Port Nicholson, and the Harbour of Porirua; and west

Cook's Strait, New Zealand.

side, Cloudy Bay, Queen Charlotte's Sound, Admiralty Bay, Blind Bay, and Massacre Bay. On the east coast of Middle Island, are Pegasus Bay, Akaroa Harbour, and Port Otago. On the west and south-west coast of the same are Chalky and Dusky Bays, and Wangaroa, Manukao, and Kaipara Harbours. Cook's Strait is about 15 miles broad at the narrowest part; it is indented on the west side with narrow locks or arms of the sea. The islands in this channel are Durville and Wellington Islands, with the island of Kapiti. The breadth of Foveaux Strait is on an average 14 miles. There are mountain ranges in the two principal islands of New Zealand, which run parallel to their east and west coasts. Mount Egmont, on the western side of North Island, is 8,270 feet high. Ruapahu, a snowy mountain, is reckoned upwards of 9,000 feet high. In Middle Island, the snowy peak of Kaikoras rises to the height of 9,300 feet. Banks' Peninsula is a rugged and mountainous tract in Middle Island. North Island has some rivers, two of which are 170 miles and 140 miles in length respectively.

The former of these can be navigated to a distance of 100 miles from the sea, by vessels of 30 tons burden. There is a lake called Taupo, which lies at the height of 1,887 feet above sea level, and has an area of 300 square miles. The following is a tabular view of the principal islands of Polynesia, with the usual particulars relating to each, as in the former lessons:—

COLONIES, SETTLEMENTS, AND COUNTRIES IN POLYNESIA.

Countries.	Capitals or Chief Islands.	Latitudes.	Longitudes.	Present Ruler.	Form of Government.
COLONIES OF NEW ZEALAND.					
NORTH ISLAND.					
Wellington	WELLINGTON	41° 20′ S.	174° 50′ E.	Victoria I.	Limited Monarchy.
Auckland	AUCKLAND	31 40	173 20		
New Plymouth	NEW PLYMOUTH	38 53	174 33		
MIDDLE ISLAND.					
Nelson	NELSON	41 15	173 20		
Canterbury	LITTLETON	42 55	172 55		
Otago	DUNEDIN	45 56	170 37		
SOUTH ISLAND.	Southern Port	47 13	167 27		
AUCKLAND ISLANDS.	Port Ross	50 30	166 7		
CHATHAM ISLANDS.	North Chatham	43 48	176 14 W.		
Friendly Islands	Tongataboo	21 8	175 10	Native Princes.	Absolute Monarchy.
Hervey Islands	Rarotonga	21 26	179 30		
Society Islands	Tahiti	17 29	149 20		
Austral Islands	Tooboosi	23 28	151 0		
Low Archipelago	Palliser	15 34	148 7		
Marquesas Islands	Ohivahoa	9 50	141 0		
Samoa Islands	Pola	13 28	171 56		
Feejee Islands	Paou	16 16	179 0 E.		
Gilbert Islands	Marshall's	1 18 N.	173 4		
Caroline Islands	Hogoleu	7 42	151 49		
Ladrone Islands	Ascension	19 41	145 27		
Sandwich Islands	Hawaii	20 19	155 58 W.		
Pelew Islands	Babelthuup	7 41	134 55 E.		
Pitcairn's Island		25 4 S.	130 16 W.		
Easter Island		27 0	109 17		

The Auckland Islands are situated at the distance of about 350 miles south of New Zealand. The largest is 25 miles long, and the area of the whole group 187 square miles. The Chatham Islands are distant about 700 miles eastward of New Zealand. The groups of islands scattered in the Polynesian basin are reckoned to contain not more than 40,000 square miles, exclusive of New Zealand. They are divided into two classes as to their natural structure; the *mountainous*, which are mostly of *volcanic* formation; and the *coral*, which are mostly *low reefs* only raised a few feet above the level of the sea. The mountainous islands, or those of volcanic structure, are the Sandwich Islands, the Ladrone Islands, the Society Islands, the Marquesas Islands, and some of the Feejee, Friendly, Samoa, and Cook's Islands; the coral islands, or those which partake of the character of reefs, are the rest of the groups and single islands formerly enumerated. Of the former class the Sandwich Islands are the most mountainous, the summits of which in two instances, those of Mouna Roa and Mouna Koa, rise to the great elevation of about 16,000 and 15,000 feet above the level of the surrounding unfathomable sea. In Hawaii, the principal island, there is a volcano of frequent and immense eruptions. These islands are situated at the distance of about 1,800 miles from California, the nearest continental country to them. Hawaii has an area of 4,500 square miles, and the entire group contains about 6,000 square miles. Gold has been recently discovered in these islands; their population in 1849 was stated at 80,000. The principal port of the Sandwich Islands is that of Honolulu, on the island of Oahu, where about 500 foreigners are settled.

The Caroline Islands extend over 7 degrees of Latitude and about 40 degrees of Longitude; but they are mere islets or groups of rock, mostly of coral formation. The Pelew Islands, westward of these, are of similar formation. The Ladrone or Marianne Islands are of volcanic origin, and the highest peaks rise 2,000 feet above the level of the sea. They are considered an appendage to the Philippines. The Feejee Islands occupy about 4 degrees of Latitude and 5 degrees of Longitude; but the largest of them, Paou, is only 250 miles in circuit, being

New Zealand Chief.

mountainous; and the peak of Nywolla, another of the group, exceeds 3,000 feet in height. The Friendly Islands occupy about 4 degrees of Latitude, and 3 degrees of Longitude; the largest, Tongataboo, is 20 miles long and 10 miles broad; the most of the islands in this group are of coral formation; their population is about 18,000. The Navigator's or Samoa Islands, which are situated north of the preceding group, are all volcanic, Pola, at the western extremity of the group, being the largest, and having a peak more than 3,000 feet high; their population is about 56,000. Hervey's or Cook's Islands occupy about 4 degrees of Latitude, and 3 degrees of Longitude; they are elevated and volcanic, but small; their population is reckoned about 14,000.

The Society Islands occupy about 2 degrees of Latitude, and 4 degrees of Longitude; these islands are elevated, volcanic, and productive. Tahiti, the largest, is 50 miles long, and has a surface of 600 square miles. It consists of two peninsulas, connected by a narrow isthmus, and is reckoned the gem of the Pacific. The population amounts to 20,000, and is reckoned Christian; at present it is said to be under the protection of France. The Austral Islands, lying to the south of the Society Islands, contain about 1,000 inhabitants, who speak the language of Tahiti. The Archipelago of Low Islands is a term applied to an immense number of coral reefs and islets lying to the eastward of the Society Islands, and extending over 14 degrees of Longitude; they are scarcely inhabited, and are of dangerous navigation. The Marquesas Islands occupy about 3 degrees of Latitude and Longitude respectively; they are situated about 900 miles north-east of Tahiti; the largest of the group is Noukahiva, about 200 square miles in surface. These islands are all mountainous, and their peaks rise to about 5,000 feet above the level of the sea. Their population is about 20,000; they were lately taken possession of by France. Pitcairn's Island, which is only about 2½ miles long and one mile broad, is of volcanic formation, having a diversified surface and a fertile soil. The mutineers of the ship *Bounty*, who settled here in 1789, have left a population amounting, in 1851, to 160 inhabitants. Easter Island, a small and insular rock, is about 36 miles in circumference, and is considered the most outlying island of the Polynesian basin; it contains craters of extinct volcanoes, and some colossal statues of which the present inhabitants can give no account.

Thus we conclude our description of the general Maps in Vol. II. of the POPULAR EDUCATOR, and of one in Vol. III., which completes the series relating to the *great divisions* of the globe. In our next series of Lessons we intend to enter more minutely into the Geography of each country, and only to refer to the Maps for illustration.

LESSONS IN ENGLISH.—No. LXV.

By JOHN R. BEARD, D.D.

SYNTAX OF THE SUBJECT.

THE ARTICLE, THE ADJECTIVE.

I NOW proceed to the grammatical analysis of simple sentences considered in their several elements, taking, as the thread of my discourse, the oft-repeated model in its fullest form,—

The sick man copiously drinks pure water at the well.

I shall consider what modifications the several parts may undergo, and what instances of agreement or government they involve.

I shall first take the subject, *the sick man*, and then the predicate, *copiously drinks pure water at the well.*

The Article.

The subject consists simply of three words. Of these words the first, *the*, may become *a*, as *a sick man*. As the sentence stood originally, some particular sick man was designated. Now this determinativeness is lost, and instead we have the statement that a sick man, whoever he may be, drinks, &c.

This want of determinativeness may be increased by substituting the indefinite pronoun *some* for the indefinite article *the*. Or it may be wholly removed, and an exact determination may be substituted, by putting *this* into the place of *a* or *the*, as *this* (or that) *sick man drinks*.

A gives an intimation of unity, but *one* declares unity explicitly. *One* then, is also a determinative.

Of these determinatives some are singular, others plural, and they may be arranged thus:—

Determinatives.

Singular.	*Plural.*
A	
One	
Some	some
This	these
That	those

These determinatives are adjectival, that is, they qualify nouns, as *a man*. Of these adjectival determinatives *one* and *some* may be used with a substantival force, as

Substantival Determinatives.

"I love boys." "*All* boys?" "No, good ones."

Here are many books, *some* in Greek, *some* in Latin.

These determinatives all agree with their nouns. Thus *a* agrees with *man*; *some* also agrees with *books*, for *some* and *books* are symbols of the same objects.

The definite article is prefixed to adjectives and adverbs to assist in the expression of comparisons; e. g.,

Adjectives. *The longer* the noviciate *the greater* the progress.
Adverb. I choose the book *the rather* because, &c.
Adj. and Adv. *The longer* we continue in sin *the more difficult* is reformation.

The definite article is also prefixed to adjectives in the superlative degree, in order to denote the highest possible amount, being thus used intensively, as—

The most strenuous exertions will be made.

The indefinite article gives to plurals the force of totality or unity; as,

"Let the damsel abide *a few days*."—(Gen. xxiv. 55.)

When *a few* is the subject of a proposition, it has a plural verb; e. g.,

"When a few years *are* come, then I shall go," &c.—(Job xvi. 22.)

The repetition of the article with adjectives of dissimilar import requires the verb to be in the plural; e. g.,

The metaphorical and *the* literal meaning *are* improperly mixed.

Here two meanings are intended. But in this example,

The original and present signification is retained,

only one signification is meant. We may also say,

The north and south *poles are* wide asunder.

The article is repeated when each object is contemplated separately.

The articles in general stand before the nouns which they qualify; e. g.,

"See *the* blind beggar dance, *the* cripple sing,
The sot *a* hero, the lunatic *a* king."—*Pope.*

When a qualifying word accompanies a noun, that qualifying word sometimes precedes and sometimes follows the article; e. g.,

Both the men were ignorant.
The two men were ignorant.
They went *many* a mile.

With names of kings and potentates the definite article with an ordinal adjective comes after the noun, as, Henry *the eighth*; so of days of the month we say, May *the thirteenth*.

By poetic license an inversion may take place, putting the noun between the article and the adjectives; e. g.,

The primrose *pale*, *the* daisy *white* and *red*.

In agreement with a usage that is very common in Greek and in French, the article sometimes has the force of a possessive pronoun; e. g.,

"Seven thousand men who have not bowed *the* knee to Baal."—(Rom. xi. 4.)

That is, "who have not bowed *their* knee."

The Adjective.

The next word in the subject is the adjective *sick*, which qualifies the noun *man*. As qualification is the attribute of the adjective,

it may be called the qualifier, and whatever word qualifies a noun performs the part of an adjective.

Adjectives may pass into adverbs; that is, adjectives may qualify verbs instead of nouns. When I say "the house is near," *near* is an adjective. But when I say "he stood near," I use *near* in an adverbial sense.

Near has also the appearance of a preposition, as "they live near each other;" but *here* it is really an adverb, the preposition *to* being understood.

Participles frequently stand as adjectives, as the *broken* wheel, the *mourning* city.

The function of qualifying is sometimes performed also by a noun, and that in two ways: first the noun, used as an adjective, stands in agreement with the qualified noun, as the *ear*-ring, the *book*-case; or in the second place the noun is in a state of dependence on the qualified noun; e. g., *the man of colour*, which is equivalent to *the coloured man*; where *of colour* has the same import as the participle *coloured*. Yet the one form of expression cannot be always substituted for the other, since *a warlike man* and *a man of war* represent very different objects.

As nouns perform the office of adjectives, so on the other hand adjectives sometimes appear as nouns. The word *square* is according to its application either a noun or an adjective; as appears in these examples:—

Noun. The general ordered the troops to form *a square*.

Adjective. A *square* room fails in due proportion.

Adjectives may be made into nouns by means of the definite article, as *the cowardly*; e. g.,

The cowardly flee when there is no danger.

It is only when an adjective has acquired a fixed substantival force that it can be preceded by the indefinite article; as,

An *imbecile* should be restrained from doing evil.

It also deserves remark, that an adjective converted into a noun by the definite article is used in the plural; thus we say,

The sick *are* well tended:

but if we want to employ the singular, we must say, not "*the sick* drinks," but "the sick *man* drinks pure water."

Adjectives are generally placed before the nouns which they qualify; e.g.,

"*Miserable* comforters are ye all."—(Job xvi. 2.)

But when an adjective is an attribute, and so forms part of the predicate, it stands after its noun, as,

"No hand is wholly *innocent* in war."

The qualified noun is sometimes understood, that is, it has to be supplied from either the sense or the context; e. g.,

"To whom they all gave heed from *the least* to *the greatest*."—(Acts viii. 10.)

The agreement between the qualifying word and the qualified word is at the bottom a logical agreement, an agreement in the thought and the sense. In form, however, there is usually no variation of the adjective, for we say alike a *tall man* and a *tall woman*. In every case the adjective agrees with the particular noun with which it stands connected. When, then, the noun is of the singular number, the adjective is to be accounted of the singular number; when the noun is of the plural number, the adjective is to be accounted of the plural number. Also the gender of the noun determines the gender of the adjective.

There are pronouns which possess an adjectival force, as *this* and *that*. *This* and *that* have plural forms; consequently *this* and *that* undergo a change when they come before plural nouns; e. g.,

This horse, *these* horses; *that* book, *those* books.

The word *whole* denoting one object, a unit, cannot like *all* be used distributively, and consequently ought not to stand before a plural noun. Hume therefore is wrong when he says,

"Almost *the whole* inhabitants were present."

Equally wrong is Webster in these words,

"*No less* than three dictionaries were published."

Less is an adjective of quantity, and three is an adjective of number. Without incongruity the two cannnot be employed of the same noun. The writer should have said,

No fewer than three dictionaries were published.

Quantity and number are often confounded, as,

What *a quantity* of people!

Which should be

What *a number* of people!

Take care not to employ adjectives where adverbs are required; e. g.,

Incorrect. It is a *remarkable* good likeness.

Correct. It is a *remarkably* good likeness.

As a singular noun requires a singular adjective, so, vice versâ, a singular adjective requires a singular noun. Hence we must condemn as ungrammatical the union of adjectives of number (except *one*) with nouns in the singular; e. g.,

Incorrect. Twenty *foot* long. Six *pound* ten *shilling*.

Correct. Twenty *feet* long. Six *pounds* ten *shillings*.

Two or more adjectives may come together so as to form a compound epithet; e. g.,

Your son is an *agreeable young* man.

In such cases the conjunction *and* is not used, and the right of precedence is determined by custom; we do not say,

Your son is a young agreeable man; nor
Your son is a young and agreeable man.

There has been some discussion as to whether we should say "the two first" or "the first two" when speaking of two objects out of a series; e. g.,

1. Give me the two first books on that shelf.
2. Give me the first two books on that shelf.

In reality there is no option between the two phrases, for they are not of the same import. Number one signifies the book that *is first* and the book that *is second* in the line of books, each of the two being considered separately; but number two means *the first pair* of books, it being implied that on the shelf there are several pairs. This second is not the ordinary meaning, consequently "the first two" should not be ordinarily used. The phrase "the two first" is elliptical; e. g.,

Seize the two *first that enter* the room; *that is*,
Seize the two *that first enter* the room.

Adjectives in the comparative degree take *than* after them; e. g.,

He is wiser than you.

The sentence is obviously elliptical; if you fill it up, it will stand thus,

He is wiser than you *are*.

Here *you* bears to *are* the same relation that *he* bears to *is*; I mean they are severally subjects to the verbs. Hence arises the ordinary rule, that *conjunctions* (*than* is a conjunction) *have the same case after as before them*. In the following,

I believe him to be wiser than you,

you may be either the subject or the object, according to the construction intended. I will fill up the ellipsis in two ways, and you will see the difference,—

Subject. I believe him to be wiser than you (are).

Object. I believe him to be wiser than (I believe) you (to be).

The proper way, then, to ascertain the relation which a noun or pronouns holds after a comparative, is to fill up the ellipsis or supply the words necessary to complete the sense.

After *than* an objective case is sometimes found; e. g.,

Nero, *than whom* no sovereign committed greater crimes.

This usage is an imitation from the Latin, and not to be encouraged in English. The sentence should be thrown into a different form; e. g.,

Nero, who committed greater crimes than any other sovereign.

And here I may notice a difference of import between two nearly related propositions; e. g.,

Solomon was wiser than any king.
Solomon was wiser than any other king.

The difference lies in this, namely, that in the second sentence Solomon is made one of the class called *kings*, while in the former sentence he is not included in that class.

If you say,

Iron is more useful than *all* metals,

you, by the use of *all*, intimate that iron is not a metal, and so do not compare the metal iron with other metals. The proper phrase is,

Iron is more useful than other metals (are).

Even this, however, is not rigidly correct, for it makes iron more useful than other metals, considered collectively, or in a mass; but what you mean is that,

Iron is more useful than any other metal.

Other, which is here required, is with the superlative out of place.

Some adjectives, from the nature of their import, do not admit of comparison. If a thing is universal, it cannot be more than universal, consequently *universal* has no comparative and no superlative. Equally is *perfect* incapable of comparison. The same may be said of *absolute, infinite, interminable, boundless*. Accordingly it is incorrect to say,

He is *more perfect* than you;

instead of which you may say,

He is *less imperfect* than you; or
He is *nearer perfection* than you.

Double comparisons are to be avoided; e. g.,

Incorrect.	Less *nobler* plunder.	The *most straitest* sect.
Correct.	Less *noble* plunder.	The *straitest* sect.

LESSONS IN ARITHMETIC.—No. XXIX.

Weights and Measures.

(*Continued from page* 279.)

Having in our last two lessons given a popular view of our moneys, weights and measures, as at present in use, with a few practical observations on some which, though abolished, are still partially employed in particular trades and districts; we now proceed with our remarks on the changes proposed by the "Commissioners appointed to consider the steps to be taken for the Restoration of the Standards of Weights and Measures." In the table of Long Measure, it appears that the English Mile is composed of 8 Furlongs, and that each Furlong is composed of 220 yards in length; therefore, the English Mile contains 1760 yards in its length; for $220 \times 8 = 1760$. The Commissioners propose an important change in the length of the Mile, namely, that it shall contain only 1,000 yards, and that it shall be denominated *Milyard*, or some other name to be fixed by Act of Parliament. They also recommend that all our itinerary distances shall be measured by the *Milyard*, and that marks be set up at every such distance of 1,000 yards; that distances less than this shall be measured in yards and decimal parts of a yard; or in feet and decimal parts of a foot. They next recommend that the acre and decimal parts of the acre shall be employed for the measurement of the surface of land in all surveys, &c.; that the denomination *square chain* or *chain*, shall be recognised as describing the *tenth part* of the acre, and that some name shall be recognised as describing the *thousandth part* of the acre. If a name were adopted similar to that employed by the French in their decimal system, it would be the *Centi-chain*, or the *Milliacre*, and this measure would contain 4·84 square yards. Lastly, on this part of the subject, they recommend that the method of expressing *Land Measure* in *acres, roods*, and *perches* shall be abolished, and that it shall be required in future to express such measures in *acres* and *decimal parts* of an acre. According to this proposed new arrangement our old measures as compared with the new would stand thus:—

Old Measures.		*Square Chains.*
1 square inch	=	0·0000013+
1 square foot	=	0·0002066+
1 square yard	=	0·0018595+
1 square perch	=	0·05625
1 rood	=	2·25000
1 acre	=	10·00000

Proposed New Measures.		*Square Yards.*
1 centichain or milliacre	=	4·84
1 decichain or centiacre	=	48·4
1 chain or deciacre	=	484·
1 acre	=	4840·

This system of Land Measures proposed by the Commissioners is only a modification of that which was long ago introduced into this country by the celebrated Edmund Gunter (who died in 1626), and which was founded by him on the *square chain* above described. This square chain is, in fact, the *square* of the length of the *chain* still called *Gunter's Chain*, and it is constantly used by our land surveyors at the present day. This *length* is 22 yards or 66 feet, being 4 poles of $5\frac{1}{2}$ yards each; and its *square* is 484 square yards, 10 times this quantity being an acre. It is divided *decimally*, or rather *centesimally*, into 100 *links*, each *link* being of course 7·92 inches in length. According to this recommendation, the Table of Land Measure will stand as follows:—

GUNTER'S LAND MEASURE.

62·7264 sq. inches	=	1 square link,
100 square links	=	1 centichain,
10000 square links	=	1 chain,
100000 square links	=	1 acre.

Such is the beautiful system of reckoning originally invented by Gunter to accompany his chain, and since his time adopted by all land surveyors, *without* the authority of an Act of Parliament, simply because it was founded on common sense, and strongly recommends itself by its simplicity. The term *centichain*, of course, has not been in use, but the thing itself has been in use for a very long period of years. The following comparison of *Gunter's Measures* with the *Common Measures* of Land, will make this subject still more evident to the attentive reader:—

Common Measures.		*Gunter's Measures.*
1 square inch	=	0·015942+
1 square foot	=	2·295684+
1 square yard	=	20·661157+
1 square perch	=	625·
1 rood	=	25000·
1 acre	=	100000·

In this remarkable case, therefore, the Royal Commissioners are slowly following in the wake of a man whose improvements were put in practice in this country *more than* 200 *years ago*!

We have already remarked that the Commissioners recommend that the weight called the *Troy Pound* and even its name should be abolished; yet, with strange inconsistency, they would permit the use of the *Troy Ounce* and the *Troy Pennyweight*, by recommending that this use be confined to gold, silver, and precious stones! This, of course, is for the sake of the *Goldsmiths* and *Jewellers*, and is a fine specimen, in a small way, of what is called "Class Legislation." They recommend the abolition of the "*Avoirdupois dram*," which is, as our readers know, the *sixteenth part* of an *Avoirdupois pound*; and they recommend that no denomination of weight lower than the *pound* be recognised, except the *ounce*, the *grain*, and the *decimal parts* of a pound! Here's a pretty kettle of fish! No denomination of weight lower than the *pound*, except the *ounce*! Now the ounce is the *sixteenth* part of a *pound*; and why not the *sixteenth part* of an *ounce*, or the *eighth part* of an *ounce*, or the *fourth part* of an *ounce*, or *half an ounce*? Yet these Commissioners, we presume, call themselves practical men! These *reasonable parts* of an ounce are to be disregarded by an Act of Parliament,—no, they are not to be recognised by the Act, and yet the *grain* is to be recognised! And pray what is the *grain*? why it is only the 7000th part of a *pound*! And so the 7000th part of a pound is to be recognised by a proposed Act of Parliament, but the 256th part is not to be recognised! What inconsistency is this! And pray where is the *Decimality* (or, the *Tenth-part-ed-ness*) of the Seven-thousandth part of a pound? The *grain* is to be recognised! and what part of an *ounce* is a *grain*? not a *decimal part* assuredly; but the part represented by $\frac{1}{437\frac{1}{2}}$, or *two-eight hundred and seventy-fifths* of an ounce; for it takes $437\frac{1}{2}$ grains *Troy Weight* to make an ounce. The Commissioners next recommend as the *unit of weight* following the *grain*, a weight called *Millet*, which is to be the *one-thousandth* part of an *Imperial* or *Avoirdupois pound*; and, of course, must weigh 7 grains. On these recommendations, we should find that our table of Imperial or Avoirdupois weight would stand thus, with the necessary names and decimal divisions for ordinary purposes:—

NEW AVOIRDUPOIS WEIGHT.

7 grains	=	1 millet
10 millets	=	1 decamillet
100 millets or 10 decamillets	=	1 hecatomillet
1000 millets or 10 hecatomillets	=	1 pound

Or if new names like *Millet* were wanted for the decimal sub-divisions recommended by the Commissioners, they might stand thus :

7 grains	=	1 millet
10 millets	=	1 centet
10 centets	=	1 decet
10 decets	=	1 pound

We may now ask, where would be the place of the recognised ounce in this table, which is not a *decimal* part but a *sixteenth* part of the pound? Where, also, would be the place of the *Troy Ounce*, and the *Troy Pennyweight*, in the same table? Assuredly, these also are *not decimal* parts of a pound. And in addition to all this, where would be the place of the different parts of the *Apothecaries weight*? For the use of this weight is also recommended to be permitted by the Commissioners, being only the *Troy Weight* differently divided for medicinal purposes.

Let us see how this new and anomalous table of weights proposed for the British Empire will now stand, including all the new and old subdivisions recommended to be adopted or permitted by the Royal Commissioners :—

PROPOSED AVOIRDUPOIS WEIGHT.

7 grains		=	1 millet,
20 grains	or $2\frac{8}{7}$ millets	=	1 scruple, *Apothecaries*,
24 grains	or $3\frac{3}{7}$ millets	=	1 pennyweight, *Troy*,
60 grains	or $8\frac{4}{7}$ millets	=	1 dram, *Apothecaries*,
70 grains	or 10 millets	=	1 centet,
$437\frac{1}{2}$ grains	or $6\frac{1}{4}$ centets	=	1 ounce, *Avoirdupois*,
480 grains	or $6\frac{6}{7}$ centets, or 20 pennyweights	=	1 ounce, *Troy*,
480 grains	or $68\frac{4}{7}$ millets, or 8 drams	=	1 ounce, *Apothecaries*,
700 grains	or 10 centets	=	1 decet,
7,000 grains	or 10 decets, or 16 ounces	=	1 pound, *Imperial*.

We have here employed the terms *Centet* and *Decet*, *gratuitously* of course; because, intimating as they do the parts of a pound for which they stand, like the term *Millet*, they are formed quite according to analogy; besides, if these terms were not adopted, some others, perhaps less expressive, would have to be adopted in their stead; but whether the names are adopted or not, the things for which they stand are strongly recommended for adoption. Now, if the preceding table, which, as we have said, includes all the recommendations of the Commissioners relating to the subdivision of the pound, what are we to think of the *uniformity* in our weights and measures, and what of the adoption of the proposed Decimal scale commingled with such heterogeneous elements? Let the public judge and answer for itself; we are doing our duty. The Commissioners, in concluding this part of the subject, recommend the "Government to consider the expediency of preparing and printing for the use of dealers in bullion an *edition* [they mean a *set*] of tables for facilitating the reduction of Assays, equivalent to those now in use, but adapted to decimal multiples of the *Troy ounce*, instead of multiples of the *Troy pound*." This recommendation shows that they are serious in wishing to preserve the elegant irregularity of subdivision exhibited in the preceding table. But we leave this part without comment to the sagacious reflections of our more ingenious readers!

We are not yet done, however, with the recommendations of the Royal Commissioners on the subject of the *Imperial* or *Avoirdupois* weights. They recommend that all weights of 14lbs., 28lbs., 56lbs., 112lbs., or any of their multiples shall be abolished; and that the only legal weights above *one pound* shall be weights consisting of multiples of *one pound* not exceeding 10lbs., and weights consisting of multiples of 10lbs., not exceeding 100lbs.; that the name *Centner*, or some other name to be fixed by Act of Parliament, shall be recognised as describing the weight of *one hundred pounds*; and that the Government shall consider the expediency of some plan by which the former or *old* weights may be withdrawn, and the latter or *new* weights may be made to take their place. According to this recommendation, which is perhaps the most sensible of all that they have made, the extension of the Avoirdupois weight would, following the example of the French, stand thus :—

10 pounds	=	1 decicentner,
100 pounds or 10 decicentners	=	1 centner,
1,000 pounds, or 10 centners	=	1 decacentner,
10,000 pounds, or 100 centners	=	1 hecatocentner.

For large weights, these names and this decimal system might be very convenient; and certainly the restoration of 100 pounds to the rank of the unit in this table would be a very great improvement; still we do not see why the name *Hundred-weight* should be abolished, seeing that it more clearly expresses to the English ear the *weight of* 100 *lbs.*, than *Centner* or any other name that could possibly be devised. By this means the name *Ton* would be abolished, which there would be little reason to regret, seeing that it is often confounded with that of *Tun*, the former being a *weight* and the latter a *measure*.

The Commissioners further recommend that the Exchequer *Standard of length* be measures and beds [for the measures] of *one foot* (the bed having divisions into *inches*, *tenths* of inches, and *tenths* and *hundredths* of feet); of *two* feet (the bed similarly divided); of *one yard* (the bed divided into *halves*, *quarters*, *eighths*, and *sixteenths*, and also into *tenths* and *hundredths*); of 10 feet (the bed divided into *feet* and *tenths* of feet); and a measure of the *chain* of 22 yards (divided into *links*).

Here then we have the combination of the *centesimal*, *duodevigintal*, *decimal*, *duodecimal*, *ternary*, and *binary* systems in the subdivision and multiples of the *chain*, the *yard*, the *foot*, the *inch*, and the *link*; and the table of *standard measures of length* will stand thus :—

STANDARDS OF LENGTH.

10 tenths of an inch	=	1 inch,
10 hundredths of a foot	=	1 tenth of a foot,
10 tenths of a foot, or 12 inches	=	1 foot
10 feet, or 120 inches	=	1 ten-foot,
10 hundredths of a two-foot	=	1 tenth of a two-foot,
10 tenths of a two-foot, or, 24 inches	=	1 two-foot,
2 sixteenths of a yard	=	1 eighth of a yard,
2 eighths of a yard	=	1 fourth of a yard,
2 fourths of a yard	=	1 half of a yard,
2 halves of a yard	=	1 yard,
10 hundredths of a yard	=	1 tenth of a yard,
10 tenths of a yard, or 3 feet	=	1 yard,
7·92 inches	=	1 link,
10 links	=	1 tenth of a chain.
100 links, or 66 feet, or 22 yards	=	1 chain.

The Commissioners also recommend the adoption of the following *standards of weight*: 1 grain, 10 grains, 100 grains, 1,000 grains, 100,000 grains, and several multiples of each; 1 Troy ounce, 10 Troy ounces, 100 Troy ounces, and several multiples of each; 1,000 Troy ounces, but no weight of 12 Troy ounces or of any of its multiples. Also the ounce (Avoirdupois) and several multiples of it, but no dram weights; lastly, *one* pound (Avoirdupois) and several multiples of it not beyond 10lbs.; 10lbs., and several multiples of it not beyond 100lbs.; 100lbs., but no weight of 14lbs., or any multiple of it, except 70lbs. Also, the *tenth*, the *hundredth*, and the thousandth parts of a pound, with several multiples of them.

In addition to the *standards of capacity* now in the Exchequer, which consist of the *Imperial gallon* and *Imperial bushel*, with some multiples and submultiples of the same, they recommend the adoption of a *wine bottle measure* to hold exactly *one-sixth* of a gallon, and of measures of 3, 5, and 9 gallons. Surely this is not a decimal division or subdivision of the standard measures of capacity!

In conclusion, among a variety of useful recommendations for carrying their proposed new system into operation, of which of course, our readers will plainly perceive we cannot

wholly approve, the commissioners recommend that a set of Itinerant [Itinerating] standards be employed for the purpose of extending its adoption in our Colonies. We think that a similar set would be of immense use in extending the same throughout the three kingdoms; but this is a minor consideration so long as the system of Weights and Measures is itself liable to great objections. Another recommendation, borrowed from the example of some towns in Scotland, is to fix standards of the principal *measures of length* in the wall or on the floor of some public building, in each of the principal towns of the empire, for public use. But here we must draw our observations to a close. Some correspondents have asked us to explain how the pendulum could be employed as a natural standard for the recovery of lost standards of measure. We cannot stop to explain this now, but we shall do it on a future occasion; the idea, however, is not new, being at least as old as the time of Butler, who says, in "Hudibras," that

> "By the vibrations of this pendulum,
> All tailors' yards should be of one
> Unanimous opinion."

LESSONS IN FRENCH.—No. LXXVI.

By Professor Louis Fasquelle, LL.D.

§ 108.—Remarks on the Demonstrative Pronoun Ce.

(1.) *Ce*, when used as a demonstrative pronoun, is almost always construed with the verb *être*, or followed by a relative pronoun:—

C'est un poids bien pesant qu'un grand nom à soutenir. Montesquieu.	*A great name is a very heavy weight to sustain.*
Ce qui me plaît c'est sa modestie. Lévizac.	*That which pleases me is her modesty.*

(2.) *Ce* is used for *he, she, they*, preceding any part of the verb *to be*, when that verb is followed by a noun, or an adjective used substantively and preceded by *the, a* or *an*, or a possessive or demonstrative adjective.

(3.) *Observe*, that the verb *être* following the pronoun *ce*, is put in the plural when the noun following that verb is plural. The pronoun *ce*, however, remains unchanged:—

C'est un trompeur.	*He is a deceitful man.*
C'est la femme que je cherche.	*She is the woman whom I seek.*
C'étaient mes amis.	*They were my friends.*
Ce seraient paroles exquises.	*They would be exquisite words.*
Si c'était un grand qui parlât. Molière.	*If a great man were to speak then.*
N'étaient-*ce* pas les mêmes hommes? Chateaubriand.	*Were they not the same men?*

All these sentences are elliptical; a noun being understood after the *ce*:—

Cet homme est un trompeur.	*That man is a deceitful one.*
Cette femme est la femme que je cherche.	*That woman is the woman whom I seek.*

(4.) *This is, that is, these are, those are*, may also be rendered by *c'est ici, ce sont ici*:—

C'est ici la place.	*This is the place.*
Ce sont là mes enfants.	*Those are my children.*

Voici, voilà, are, however, to be preferred to *c'est ici*, &c.:—

Voici la place.	*This is the place.*
Voilà mes enfants.	*Those are my children.*

(5.) *Ce* answers to the English pronoun *it*, when this latter word stands as the nominative of the verb *to be*, without definite reference to an antecedent:—

Ce n'est que par les sens que l'âme peut s'instruire. Fontanes.	*It is only through the senses that the mind can receive instruction.*
Ce fut d'une retraite de pâtres et d'aventuriers, que sortirent les conquérants de l'univers. Rollin.	*It was from a refuge for shepherds and adventurers, that emerged the conquerors of the world.*
C'est un défaut capital qu'il faut éviter dans quelque sujet que ce soit. Voltaire.	*This is a capital defect which should be avoided in whatever subject it may be.*

(6.) When the verb *être*, however, is used unipersonally, and followed by an adjective [§ 87, (3.)], the pronoun *it* is not rendered by *ce*, but by the pronoun used with all unipersonal verbs (*il*):—

Il est nécessaire d'étudier.	*It is necessary to study.*
Il est plus difficile pour les nations que pour les individus, de recouvrer l'estime de leurs voisins quand elles l'ont perdue. Boiste.	*It is more difficult for nations than for individuals, to recover the esteem of their neighbours when they have lost it*

§ 109.—The Relative Pronoun.

(1.) The relative pronoun que, *whom, which*, can in French never be suppressed like the corresponding English pronouns:*—

Les louanges *que* nous donnons, se rapportent toujours par quelque chose à nous-mêmes. Massillon.	*The praises (which) we give, have always in some way a relation to ourselves.*

(2.) The pronouns *quel, que, qui, lequel*, represent the English pronouns *which* or *what* used interrogatively.

1. *Quel* is used before a noun in a determinative sense:—

Quel livre lirons-nous?	*What or which book shall we read?*
Quel est donc votre mal? Molière.	*What then is your ailment?*

2. *Que* is used before a verb:—

Que dites-vous?	*What do you say?*

3. *Quoi* is used as an exclamation:—

Quoi! est-ce vous?	*What! is it you?*

4. *Lequel*, used interrogatively, means *which one*:—

Voici deux plumes; *laquelle* voulez-vous?	*Here are two pens; which (which one) will you have?*

(3.) *Qui* is also used interrogatively for the *régime direct*, and preceded by a preposition for the *régime indirect*. It then means *whom, of whom, to whom, whose*, &c.:—

Qui avez-vous vu?	*Whom have you seen?*
De *qui* tenez-vous cette nouvelle?	*From whom have you this news?*
A *qui* est ce livre?	*Whose book is this?*

§ 110.—The Pronoun En.

(1.) We have already [§ 39, (17.) § 95, (5.) § 103, Rule (1.)] made several remarks on this pronoun.

(2.) *En* signifies *of it, from it, with it, about it, of them, from them*, &c., expressed or understood. Though *en* is by some French writers often used in relation to persons, their example should be imitated in such cases only as that presented by the example [§ 92, (2.)].

(3.) *En*, used as an equivalent for the English *some* or *any*, expressed or understood, preserves its nature of an indirect regimen, and has, in the same manner as the French article placed before a noun used partitively, the sense of *of it, of them*; the word *partie* being understood:—

Avez vous des pommes?	*Have you apples?*

That is, *some*, or rather, *of the, a part of the apples.*

J'en ai.	*I have, I have some; I have of them*, or *I have (a part) of them.*

(4.) *En* sometimes recalls the whole or part of a proposition:—

L'on ne saurait voir, sans *en* être piqué, Posséder par un autre un bien qu'on a manqué. Molière.	*We cannot, without being piqued, see another person in possession of goods which we have failed in obtaining.*
N'*en* disputons plus; chacun a sa pensée. Molière.	*Let us no longer argue about this; every one has his own opinion.*

§ 111.—The Pronoun Y.

Some remarks have already been made on this pronoun [§ 39, (18.) § 103, (2.)]. *Y* means *to it, at it, to them, at them.* It is seldom used in relation to persons or animals, but frequently in relation to things:—

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* The conjunction, *that*, is often omitted in English; its equivalent, *que*, must always be expressed in French.

Je crois *qu'il* est ici.	*I believe (that) he is here.*

Je reçois votre lettre, ma chère enfant, et j'y fais réponse avec précipitation. MME. DE SEVIGNÉ.	*I receive your letter, my dear child, and answer it (make answer thereto) in haste.*
Tirer vanité de quelque chose, c'est prouver qu'on n'*y* est pas accoutumé. BOISTE.	*To feel vanity on account of any thing, is proving that we are not accustomed to it.*
Chargez-vous de cette affaire; donnez-*y* tous vos soins. BONIFACE.	*Take this affair upon yourself; give all your care to it.*

§ 112.—PLACE OF THE PRONOUNS EN AND Y.

See § 104, (1.) (2.)

§ 113.—THE INDEFINITE PRONOUN ON [41, (4.)].

(1.) *On*, which is very extensively used in the French language, is said only of persons. The verb, of which it is always the nominative, must be in the singular. This pronoun is of the masculine gender. [*See* (2.)] *On* is used in French for *people, one, some one, we, they*, whenever these words have a general and indefinite meaning, and do not refer to any particular word:—

On pardonne aisément le mal involontaire. DE LA BOUTRAYE.	*We (people, they, &c.) easily forgive involuntary injuries.*
On cherche les rieurs, et moi je les évite. LA FONTAINE.	*People (they, we) seek laughing* or *merry people, and I avoid them.*

Another translation of the above sentences, will show us that the pronoun *on* often enables the French to make use of the active voice, which they always prefer to the passive.* Thus the two examples last given may be rendered as follows:—

Active Voice in French.	*Passive Voice in English.*
On pardonne aisément le mal involontaire.	*Involuntary injuries are easily forgiven.*
On cherche les rieurs, mais moi je les évite.	*Merry* or *joyful people are generally sought; for my part, I avoid them.*

A few more examples, from some of the best French authors, elucidating the use of this pronoun, will be useful to the student:—

Quand *on* est chrétien de quelque sexe que *l'on* soit, il n'est pas permis d'être lâche. FÉNÉLON.	*A Christian, of whichever sex he may be, is not allowed to be cowardly.*
On peut être honnête homme, et faire mal des vers. MOLIÈRE.	*One may be a worthy man, and make bad verses.*
On aime peu celui qui n'ose aimer personne. DELILLE.	*We feel but little love for him who dares love nobody.*
A-t-*on* jamais pleuré d'avoir fait son devoir? CHAMFORT.	*Have we ever grieved on account of having done our duty?*
Quand *on* a même but rarement on s'accorde. LÉBRUN.	*Those who have the same aim, rarely agree.*
Artistes, écrivains, poëtes, si vous vous copiez toujours, *on* ne vous copiera jamais. BERNARDIN DE ST. PIERRE.	*Artists, writers, poets! if you always copy each other, no person will copy you.*

(2.) If the word *on* denotes definitely a female, the adjective relating to it takes the feminine termination:—

Quand *on* est *belle*, *on* ne l'ignore pas. L'ACADÉMIE.	*When one (a lady) is handsome, she is not ignorant of it.*

(3.) The pronoun *on* must be repeated before every verb:—

On lève l'ancre, *on* part, *on* fuit loin de la terre.	*They raise the anchor, they depart, they flee far from the land, already they discovered the shores of England.*
On découvrait déjà les bords de l'Angleterre. VOLTAIRE.	

§ 114.—THE VERB.—AGREEMENT OF THE VERB WITH ITS SUBJECT.

(1.) The verb agrees with its nominative or subject, whether that nominative precedes or follows:—

L'homme est né pour régner sur tous les animaux. VOLTAIRE.	*Man is born to reign over all the animals.*
Les hommes sont encore enfants à soixante ans. AUBERT.	*Men are still children (even) at sixty.*
Par ces portes *sortaient* les fières *légions*. SAINT VICTOR.	*Through those gates issued the proud legions.*

(2.) When a verb has two or more singular nominatives connected by the conjunction *et*, the verb is put in the plural:—

La *colère* et la *précipitation sont* deux choses fort opposées à la prudence. FÉNÉLON.	*Anger and precipitation are two things very much opposed to prudence.*
La *violence* et la *vertu* ne peuvent rien l'une sur l'autre. PASCAL.	*Violence and virtue have no power over each other.*

(3.) When a verb has several singular nominatives not connected by *et*, it is put in the singular or in the plural according to circumstances:—

1. It is put in the singular, if the nominatives are in some way synonymous:—

La *douceur*, la *bonté* du grand Henri, *a* été célébrée de mille louanges. PÉLISSON.	*The mildness, the goodness of the great Henry, has been celebrated by a thousand praises.*
D'où *peut* venir cet ennui, ce dégoût? COLIN D'HARLEVILLE.	*Whence can proceed that ennui, that disgust?*

2. When, in a series of nominatives, the last has more force or interest attached to it, and therefore, makes us, as it were, overlook the others:—

Ce sacrifice—votre intérêt, votre honneur, DIEU vous le *commande!*	*This sacrifice—your interest, your honour,* GOD *commands it!*

3. The verb is put in the plural, when the affirmation is intended to be made of all the nominatives taken collectively, and not of each in particular:—

La douceur, les soupirs de cette femme infortunée ne *purent* le fléchir. WAILLY.	*The sweetness, the sighs of that unfortunate woman could not move him.*
Savez vous, si demain, Sa *liberté, ses jours*, seront en votre main? RACINE.	——*Do you know, if to-morrow, his liberty, his life, will be in your power?*

(4.) On the forms of the verbs when connected by *ou*, See S. 83, 2, 3.

§ 115.—NUMBER OF THE VERB AFTER A COLLECTIVE NOUN.

(1.) Every verb having, as its subject, a *general* collective noun [§ 3, (6.)], preceded by the article, such as *la totalité, l'infinité*, &c., takes the number of that noun:—

L'armée des infidèles *fut* entièrement détruite. L'ACADÉMIE.	*The army of the infidels was entirely destroyed.*
La *multitude* des bonnes choses que l'on trouve dans un ouvrage, *fait* perdre de vue la multiplicité des mauvaises. CAMINADE.	*The multitude of the good things which we find in a work, makes us lose sight of the multiplicity of the bad ones.*

(2.) When a partitive collective noun [§ 3, (6.)] occurs as the subject of a proposition, the verb agrees with that noun, if it occupies the first rank in the thought of the speaker or writer.

The verb agrees, on the contrary, with the plural noun following the collective word, if the collective acts only a secondary part, or if it is employed only to add an accessory idea of number:—

Agreement with the Collective.	*Agreement with the following Nouns.*
Une *troupe* d'assassins *entra* dans la chambre de Coligny. VOLTAIRE.	Une troupe de *nymphes* couronnées de fleurs, *nageaient* autour de son char. FÉNÉLON.
A gang of assassins entered Coligny's chamber.	*A troup of young nymphs, crowned with flowers, were swimming around her chariot.*
Une *nuée* de traits *obscurcit* l'air.	Une nuée de *barbares désolèrent* le pays. L'ACADÉMIE.
A cloud of arrows darkened the air.	*A cloud of barbarians desolated the country.*
Cette *espèce* de paons *paraît* avoir éprouvé les mêmes effets par la même cause. BUFFON.	Cette espèce de *chiens* qu'on appelle chiens de Laconie, ne *vivent* que dix ans. BOILEAU.
That species of peacocks seems to have experienced the same effects through the same cause.	*That species of dogs which they call Laconian dogs, live only ten years.*

* On dit, *it is said*; on rapporte, *it is related*; on craint, *it is feared*, &c. Cela se fait ainsi, literally, *that makes itself thus, that is made in this manner*, &c.

§ 116.—Number of the Verb Etre after the Pronoun Ce.

(1.) The verb *être* preceded or followed by *ce*, as the grammatical subject, takes the number of the noun placed in apposition with that pronoun [§ 108, (3.)]:—

Ce sont les mœurs qui font la bonne compagnie. LA CHAUSSÉE.	*It is morals which form good company.*
Sont-ce des religieux et des prêtres qui parlent ainsi? *sont-ce* des chrétiens? PASCAL.	*Are they monks and priests who speak so? are they Christians?*

(2.) The verb *être* may also be put in the plural, when the pronoun *eux* and *elles* are put in apposition with the pronoun *ce*. This rule, however, is optional, as the examples will show. Before *nous* and *vous* similarly placed, the verb is always in the singular: *c'est* nous; *c'est* vous:—

Singular.	*Plural.*
C'est eux qui *ont* bâti ce superbe labyrinthe. BOSSUET.	Ce *sont* eux qui viennent. BESCHERELLE.
It is they who have built that superb labyrinth.	*It is they who come.*

§ 117.—The Verb relating to several Nouns in Different Persons.

A verb having several subjects in different persons, is put in the plural, and assumes the termination of the first person in preference to that of the second, and that of the second in preference to that of the third. It may then be preceded by the plural pronoun of the person preferred, recapitulating, as it were, all the other subjects:—

Votre père et *moi*, *nous* avons été longtemps ennemis l'un de l'autre. FÉNÉLON.	*Your father and I have long been enemies to each other.*
Allez; *vous* et vos semblables n'*êtes* point faits pour être transplantés. MONTESQUIEU.	*Go; you and such as you are not fit to be transplanted.*

LESSONS IN GERMAN.—No. LXVI.

(1) ALPHABETICAL LIST OF VERBS OF THE OLD FORM.

(commonly called Irregular Verbs).

Note that in the following list many *compound* forms are not set down. In such case, the student has only to look for the verb in its *simple* form.

INFINITIVE.	PRESENT INDICATIVE.	IMP. INDIC.	IMP. SUBJ.	IMPERAT.	PARTICIP.	REMARKS.
Backen *a*), to bake,	ich backe, du bäckſt, er bäckt,	ich buk	ich büke	backe	gebacken.	*a*) Regular when active; as, er backte Brod; das Brod buk.
Bedingen *b*), to bargain,	ich bedinge, ꝛc.	ich bedung	ich bedünge	bedinge	bedungen.	*b*) Regular when it means to add a condition, to modify. Bedingt, conditional, is regular.
Bedürfen, to need,	ich bedarf, du bedarfſt, er bedarf, wir bedürfen, ꝛc	ich bedurfte	ich bedürfte		bedurft.	
Befehlen, to command,	ich befehle, du befiehlſt, er befiehlt, ꝛc.	ich befahl	ich befähle	befiehl	befohlen.	
Befleißen, (ſich) *c*), to apply one's self,	ich befleiße, ꝛc.	ich befliß	ich befliſſe	befleiß	befliſſen.	*c*) Befleißigen (ſich), to apply one's self, is regular.
Beginnen *d*), to begin,	ich beginne, ꝛc.	ich begann	ich begänne	beginne	begonnen.	*d*) In the imperf. subj. begönne is also used.
Beißen, to bite,	ich beiße, du beißeſt, er beißt,	ich biß	ich biſſe	beiß or beiße	gebiſſen.	
Beklemmen, *e*), to pinch, press (by anxiety),	ich beklemme, ꝛc.	ich beklemmte	ich beklemmte	beklemme	beklommen (beklemmt)	*e*) Beklemmt is not frequently used, and is employed, only in the sense of compressed.
Bergen, to conceal,	ich berge, du birgſt, er birgt,	ich barg	ich bärge	birg	geborgen.	
Berſten, to burst,	ich berſte, ꝛc.	ich barſt or barſt	ich bärſte	berſte or birſt	geborſten.	
Beſinnen (ſich), to think of,	ich beſinne, ꝛc.	ich beſann	ich beſänne	beſinne	beſonnen.	
Beſitzen, to possess,	ich beſitze, ꝛc.	ich beſaß	ich beſäße	beſitze	beſeſſen.	
Betrügen, to deceive,	ich betrüge, ꝛc.	ich betrog	ich betröge	betrüge	betrogen.	
Bewegen *f*), to induce, move,	ich bewege, ꝛc.	ich bewog	ich bewöge	bewege	bewogen.	*f*) Irregular when it means, to induce; regular when it means, to move a *body* or affect the *sensibilities*.
Biegen, to bend,	ich biege, ꝛc.	ich bog	ich böge	biege	gebogen.	
Bieten *g*), to offer, to bid,	ich biete, ꝛc.	ich bot	ich böte	biete	geboten.	*g*) Beutſt and beut, in the present, are poetical.
Binden, to bind,	ich binde, ꝛc.	ich band	ich bände	binde	gebunden.	
Bitten, to entreat, to beg.	ich bitte, ꝛc.	ich bat	ich bäte	bitte	gebeten.	
Blaſen, to blow,	ich blaſe, du bläſeſt, er bläſt,	ich blies	ich bliese	blaſe	geblaſen.	
Bleiben, to remain,	ich bleibe, ꝛc.	ich blieb	ich bliebe	bleibe or bleib	geblieben.	
Bleichen *h*), to fade,	ich bleiche, ꝛc.	ich blich	ich bliche	bleiche	geblichen.	*h*) Bleichen, to bleach in the sun, active, is regular.
Braten, to roast,	ich *brate*, du bratеſt or brätſt, er bratet or brät,	ich briet	ich briete	brate	gebraten.	
Brechen, to break,	ich breche, du brichſt, er bricht,	ich brach	ich bräche	brich	gebrochen.	
Brennen *i*), to burn,	ich brenne, ꝛc.	ich brannte	ich brennete	brenne	gebrannt.	*i*) Often regular when active; Ich brennte Holz, weil es beſſer brannte als Torf.
Bringen, to bring,	ich bringe, ꝛc.	ich brachte	ich brächte	bringe	gebracht.	
Denken, to think,	ich denke, ꝛc.	ich dachte	ich dächte	denke	gedacht.	
Dingen *k*), to bargain,	ich dinge, ꝛc.	ich dung	ich dünge	dinge	gedungen.	*k*) Dingte is sometimes used in the imperfect, in the sense of hire.
Dreſchen, to tresh,	ich dresche, du driſcheſt, er driſcht,	ich drasch or dreſch	ich dräſche or dröſche	driſch	gedroſchen.	
Dringen *l*), to press, to urge,	ich dringe, ꝛc.	ich drang	ich dränge	dringe	gedrungen.	*l*) For drang, drung was formerly in use.

IRREGULAR VERBS. (*Continued.*)

INFINITIVE.	PRESENT INDICATIVE.	IMP. INDIC.	IMP. SUBJ.	IMPERAT.	PARTICIP.	REMARKS.
Dürfen, to be able,	ich darf, du darfst, er darf, wir dürfen, &c.	ich durfte	ich dürfte	—	gedurft.	
Empfangen, to receive,	ich empfange, du empfängst, er empfängt,	ich empfing	ich empfinge	empfange	empfangen.	
Empfehlen, to recommend,	ich empfehle, du empfiehlst, er empfiehlt,	ich empfahl	ich empföhle	empfiehl	empfohlen.	
Empfinden, to feel,	ich empfinde, &c.	ich empfand	ich empfände	empfinde	empfunden.	
Entrinnen, to escape,	ich entrinne, &c.	ich entrann	ich entränne	entrinne	entronnen.	
Entschlafen, to fall asleep,	ich entschlafe, &c.	ich entschlief	ich entschliefe	entschlafe or entschlaf	entschlafen.	
Entsprechen, to answer,	ich entspreche, &c.	ich entsprach	ich entspräche	entsprich	entsprochen.	
Erbleichen *m*), to turn pale,	ich erbleiche, &c.	ich erblich	ich erbliche	erbleiche	erblichen.	*m*) Derived from bleichen, to whiten as in the sun, which is regular.
Erfrieren, to freeze,	ich erfriere, &c.	ich erfror	ich erfröre	erfriere	erfroren.	
Ergreifen, to seize, to catch,	ich ergreife, &c.	ich ergriff	ich ergriffe	ergreife or ergreif	ergriffen.	
Erkiesen *n*), to select	ich erkiese, &c.	ich erkieste	ich erkieſete	erkiese	erkoſen.	*n*) It is used in sublime style, and in poetry
Erkühren *o*), to choose,	ich erkühre, (erküre), &c.	ich erkor (erkohr)	ich erkühre or (erküre)	erkühre (erküre)	erkohren. (erkoren).	*o*) This verb is very seldom used.
Erlöschen *p*), to extinguish,						*p*) Like verlöschen and auslöschen, irregular only when intransitive. Löschen is always transitive and regular.
Ersaufen, to be drowned	ich ersaufe, du ersäufest, er ersäuft,	ich ersoff	ich ersöffe	ersaufe	ersoffen.	
Erschallen, to resound,	ich erschalle, &c.	ich erscholl	ich erschölle	erschalle	erschollen.	
Erscheinen, to appear,	ich erscheine, &c.	ich erschien	ich erschiene	erscheine	erschienen.	
Erschrecken *q*), to be frightened,	ich erschrecke, du erschrickst, er erschrickt,	ich erschrak	ich erschräke	erschrick	erschrocken.	*q*) Irregular always as an intransitive verb, but regular when transitive.
Ertrinken, to be drowned,	ich ertrinke, &c.	ich ertrank	ich ertränke	ertrink	ertrunken.	
Erwägen *r*), to consider	ich erwäge, &c.	ich erwog	ich erwöge	erwäge	erwogen.	*r*) More frequently used as a regular verb.
Essen, to eat,	ich esse, du issest, er isset or ißt,	ich aß	ich äße	iß	gegessen.	
Fahen *s*), (obsolete), to catch,	ich fahe, du faheſt, er fahet,		—	fahe	gefahen.	*s*) This poetical word is rarely used, and in the imperfect not at all.
Fahren *t*), to drive a carriage,	ich fahre, du fährest, er fährt	ich fuhr	ich führe	fahre	gefahren.	*t*) All the compounds of fahren are irregular except willfahren.
Fallen, to fall,	ich falle, du fällst, er fällt,	ich fiel	ich fiele	falle	gefallen.	
Falten *u*), to fold,	ich falte, &c.	ich faltete	ich faltete	falte	gefalten.	*u*) Irregular only in the participle now, for which gefaltet is often used.
Fangen *v*), to catch,	ich fange, du fängst, er fängt,	ich fing	ich finge	fange	gefangen.	*v*) The forms fieng and fienge are obsolete. So also empfing and empfinge.
Fechten, to fight,	ich fechte, du fichtst, er ficht	ich focht	ich föchte	ficht	gefochten.	
Finden, to find,	ich finde, &c.	ich fand	ich fände	finde	gefunden.	

LESSONS IN GERMAN PRONUNCIATION.—No. XIII.

13.

An den Mond.
ân dain moant.

Wie schön kommt dort mit freundlich hellem Lichte
Vee shö'n komt dort mit froint'-lich hel'-lem lich'-tai

Der volle Mond daher!
Da'r fol'-lai moant dâ-hair'!

Wie wiegt im Silberglanz die Pappel und die Fichte
Vee veeht im zil'-ber-glänts dee pâp'-pel öönt dee lich'-tai

Die schlanken Aeste hin und her!
Dee shlân'-ken e'-stai hin öönt hair!

O welch ein Blick! O welch ein sanfter Schimmer!
O velch ine blick! O welch ine zânf'-ter shim'-mer!

Oft hab' ich dich geseh'n,
Oft hâhp ich dich gai-zeyn',

Du stiller guter Mond, und doch bist du mir immer
Doo stil'-ler, goo'-ter moant, öönt doch bist doo meer im'-mer

So neu, so lieb und wunderschön!
Zo noi, zo leep öönt vöön''-der-shö'n'!

Wer lehrte dich so abgemessen gehen?
Vair lay'r'-tai dich zo âp''-gai-mess'-sen ghey'-hen?

An keinem Ort zu früh,
ân ki'-nem ort tsoo frü,

An keinem Ort zu spät hat man dich je gesehen.
ân ki'-nem ort tsoo spate hâht mân dich yey gai-zey'-hen.

O Freund! verirrst du dich denn nie?
Oh froint! ferr-irrst' doo dich den nee?

Gewiß dich führt ein gütig weises Wesen.
Gai-viss', dich fü'rt ine gü'-tich vi'-zess vai'-zen.

Wohl muß es gütig sein:
Vole möss ess gü'-tich zine:

Du leuchtest freundlich ja dem undankbaren Bösen
Doo loich'-test froint'-lich yáh dem öön''-dánk-báh'-ren bözen

Nicht dem Erkenntlichen allein.
Nicht dem err-kent'-lich-chen ál-line'.

Und doch geschieht's, daß Menschen, die es sehen,
öönt doch gai-sheets', dáss men'-shen, dee ess zey'-hen,

Wie du so huldreich bist,
Vee doo zo höölt'-ri'ch bist,

Im Herzen Neid und Haß, in deinem Lichte gehen,
Im herr'-tsen nite öönt háss, in di'-nem lich'-tai ghey'-hen,

Auf Rache sinnend und auf List.
Ouf rách'-che zin'-nent öönt ouf list.

Ich aber will an dir ein Beispiel nehmen,
Ich áh'-ber vill án deer ine by'-speel nai'-men,

Voll Milde sein, wie du;
Foll mil'-dai zine, vee doo;

Ich will durch Liebe den, der mich nicht liebt beschämen
Ich vill döörch lee'-bai dain, dair mích nícht leept, bai-shai'-men

Und friedlich fördern seine Ruh.
öönt freet'-lich för'-dern zi'-nai roo.

Du wirst es sehn von deinem Himmel oben,
Doo virrst ess zey'n fon di'-nem him'-mel o'-ben,

Du holdes Licht der Nacht;
Doo hol'-dess licht dair nácht;

Mit Freude wirst du's seh'n und deinen Schöpfer loben,
Mit froi'-dai virrst doo'ss zeyn öönt di'-nen shöp'-fer lo'-ben.

Der dich und mich so gut gemacht.
Dair dich öönt mích zo goo't gai-mácht'.

VOCABULARY.

Mond, *m.* moon	erkenntlich, grateful
dort, there	allein, alone, but, however
Licht, *n.* light	geschehen, to happen
wiegen, to rock	huldreich, gracious
Pappel, *f.* poplar	Neid, *m.* envy
Fichte, *f.* pine	Haß, *m.* hatred
schlank, slender, well shaped	Rache, *f.* revenge
Ast, *m.* bough	sinnen, to ponder, think, devise, contrive
lehren, to teach	Beispiel, *n.* example
abgemessen, measured	Milde, *f.* mildness, *adj.* mild
messen, to measure	durch, through, by
ab, *Prefix* off, away,	beschämen, to shame, to make ashamed
kein, no	den, der, him, who
Ort, *m.* place, spot	friedlich, peaceful
je, ever	Friede, *m.* peace
nie, never	fördern, to promote
gewiß, certain, -ly	Ruhe, *f.* rest, repose, tranquillity
führen, to lead, to take	ruhig, quiet
gütig, kind	oben, above, upstairs
weise, wise	holb, kind, sweet, lovely
Wesen, *n.* being, essence	Schöpfer, creator.
leuchten, to shine	
Böse, *m.* evildoer, devil	

L'ouvrier sujet au vin ne deviendra jamais riche, et celui qui néglige les petites choses tombe peu à peu.—*Ecclesiastique.*

La jalousie est le plus grand des maux, et celui qui fait le moins de pitié aux personnes qui le causent.—*La Rochefoucauld.*

La différence entre la jalousie et l'envie, c'est que par l'envie nous désirons pour nous ce qui arrive d'heureux aux autres; par la jalousie, nous craignons qu'ils ne participent à notre bonheur.—*Charron.*

Le jeu est le dissipateur du bien, le perte du temps, le gouffre des richesses, l'écueil de l'innocence, la destruction des sciences, l'ennemi des muses, le père des querelles.—*J.-J. Rousseau.*

LESSONS IN ALGEBRA.—No. VII.

DIVISION.

Greatest Common Measure.

108. A *common measure* of two or more quantities, is a quantity which will *divide* or *measure* each of them without a remainder. (Art. 30.) Thus $2d$ is a common measure of $12d$, $6d$, $8d$, &c.

109. *The greatest common measure* of two or more quantities, is the greatest quantity which will divide these quantities without a remainder. Thus $6d$ is the greatest common measure of $12d$ and $18d$; and 8 is the greatest common measure of 16, 24, and 32.

110. To find the greatest common measure of two given quantities.

Rule.—*Divide the greater of the given quantities by the less, the divisor by the remainder, and every successive divisor by its own remainder, till nothing remains; the last divisor will be the greatest common measure.*

111. To find the greatest common measure of three or more quantities.

Rule.—*Find the greatest common measure of any two of them; then the greatest common measure of that one and another of the quantities, and so on, till all the quantities have been employed in the operation; the last divisor is the greatest common measure.*

The greatest common measure of two quantities is not altered by multiplying or dividing either of them by any quantity which is not a divisor of the other, and which contains no factor which is a divisor of the other.

The common measure of ab and ac, is a. If either be *multiplied* by d, the common measure of abd and ac, or of ab and acd, is still a. On the other hand, if ab and acd are the given quantities, the common measure is a; and if acd be *divided* by d, the common measure of ab and ac is a.

112. Hence, in finding the common measure by division, the divisor may often be rendered more simple by dividing it by some quantity which does not contain a divisor of the dividend. Or the dividend may be *multiplied* by a factor, which does not contain a measure of the divisor.

1. Find the greatest common measure of $6a^2+11ax+3x^2$ and $6a^2+7ax-3x^2$.

Here, $6a^2+7ax-3x^2)6a^2+11ax+3x^2(1$
$6a^2+7ax-3x^2$

$4ax+6x^2$ Remainder.

Now, dividing this remainder by $2x$, we have $2a+3x$ for the next divisor.

Divisor. *Dividend.*
$2a+3x)6a^2+7ax-3x^2(3a-x$
$6a^2+9ax$

$-2ax-3x^2$
$-2ax-3x^2$

The first remainder was divided by $2x$ because it is a common factor of both terms of that remainder, and it cannot form a factor of the common measure, not being a factor of every term in the proposed quantities. As the division of the preceding divisor by this simplified remainder leaves no remainder; therefore $2a+3x$ is the common measure required.

2. Find the greatest common measure of x^3-b^2x and $x^2+2bx+b^2$. Ans. $x+b$.

3. Find the greatest common measure of $cx+x^2$ and c^2c+a^2x. Ans. $c+x$.

4. Find the greatest common measure of $3x^3-21x-9$ and $2x^3-16x-6$. Ans. x^2-8x-3.

5. Find the greatest common measure of a^4-b^4 and $a^5-b^2a^3$. Ans. a^2-b^2.

6. Find the greatest common measure of x^2-1 and $xy+y$. Ans. $x+1$.

7. Find the greatest common measure of x^4-a^3 and x^4-a^4. Ans. $x-a$.

8. Find the greatest common measure of $a^2-ab-2b^2$ and $a^2-2ab+2b^2$. Ans. $a-2b$.

9. Find the greatest common measure of a^4-x^4 and $a^3-a^2x-ax^2+x^3$. Ans. a^2-x^2.

10. Find the greatest common measure of a^3-ab^2 and $a^2+2ab+b^2$. Ans. $a+b$.

Least Common Multiple.

113. A *common multiple* of two or more quantities is a quantity which can be divided by each of them without a remainder. Thus, $12ab$ is a common multiple of $4a$ and $6b$; or, of $3a$ and $2b$, &c.

114. The least common multiple of two or more quantities is the least quantity which can be divided by each of them without a remainder. Thus, $12abc$ is the least common multiple of $4a$, $3b$, and $6c$.

115. To find the least common multiple of two or more given quantities.

Rule.—*Reduce the given quantities to their prime factors; find the product of the greatest powers of these factors, and it will be the least common multiple required.*

Examples.

1. Find the least common multiple of $(a+x)^2$, a^2-x^2, and $(a-x)^2$.

Here, the prime factors of the quantities are $(a+x)^2$, $(a+x)$, $(a-x)$, and $(a-x)^2$; now of these factors, which are different powers of $a+x$ and $a-x$, the first and last contain their highest powers; therefore, according to rule, $(a+x)^2(a-x)^2=(a^2-x^2)^2$ is the least common multiple of the quantities required.

2. Find the least common multiple of be, ce, and bg. Ans. $bceg$.

3. Find the least common multiple of a^2b^3 and a^3b^2. Ans. a^3b^3.

4. Find the least common multiple of $2ab$, $3bc$, $4cd$, $5de$, and $6ef$. Ans. $60abcdef$.

5. Find the least common multiple of $(a+b)^3$, (a^2-b^2), $(a-b)^2$, and $(a-b)^3$. Ans. $(a^2-b^2)^3$.

Fractions.

116. Fractions *in algebra*, as well as in arithmetic, have reference to *parts* of numbers or quantities. The term is derived from the Latin word *fractio*, which signifies a *breaking* into parts.

Thus $\frac{a}{2}$ is $\frac{1}{2}a$; $\frac{b}{4}$ is $\frac{1}{4}b$; $\frac{2a}{3}$ is $\frac{2}{3}a$; and $\frac{4x}{7}$ is $\frac{4}{7}x$.

117. Expressions in the form of fractions occur more frequently in algebra than in arithmetic. Indeed, the numerator of *every* fraction may be considered as a *dividend*, of which the denominator is a *divisor*.

118. The *value* of a fraction, is the *quotient* of the numerator divided by the denominator. Thus the value of $\frac{6}{2}$ is 3. The value of $\frac{ab}{b}$ is a; and the value of $\frac{aa-bb}{a-b}$ is $a+b$.

119. From this it is evident, that whatever changes are made in the *terms* of a fraction, if the *quotients* be not altered, the value of the fraction remains the same. For any fraction, therefore, we may substitute any *other* fraction which will give the same quotient. Thus $\frac{4}{2}=\frac{10}{5}=\frac{4ba}{2ba}=\frac{8drx}{4drx}=\frac{6+2}{3+1}$, &c. For the quotient in each of these instances is 2.

120. It is also evident, from the preceding articles, that *if the numerator and denominator be both multiplied, or both divided, by the same quantity, the value of the fraction will not be altered.* Thus $\frac{2}{3}\frac{7}{3}=\frac{18}{27}$, each term being multiplied by 9; and $\frac{24}{36}=\frac{8}{12}=\frac{2}{3}$, each term being divided by 3, and the result by 3 again.

So $\frac{bx}{b}=\frac{abx}{ab}=\frac{3bx}{3b}=\frac{\frac{1}{2}bx}{\frac{1}{2}b}=\frac{\frac{3}{8}abx}{\frac{3}{8}ab}$; for the quotient in each case is x.

121. Any integral quantity may, without altering its value, be expressed in the form of a fraction, *by making unity or* 1 *the denominator; or by multiplying the quantity into any proposed denominator, and making the product the numerator of the fraction required.* Thus, $a=\frac{a}{1}=\frac{ab}{b}=\frac{ad+ah}{d+h}=\frac{6adh}{6dh}$. The quotient of each of these being a.

Also $d+h=\frac{dx+hx}{x}$; and $r+1=\frac{2drr+2dr}{2dr}$.

On the Signs of Fractions.

122. *Each sign* in the numerator and denominator of a fraction affects only the *single* term to which it is prefixed. The *dividing line* answers the purpose of a parenthesis or *vinculum*, namely, to connect the several terms of which the numerator and denominator may each be composed. The *sign prefixed* to it, therefore, affects the *whole* fraction collectively and every term individually. It shows that the *value* of the whole fraction, and of course every term, is to be subjected to the operation denoted by the sign. Hence, *if the sign before the dividing line be changed from + to −, or from − to +, the value of the whole fraction is also changed.*

Thus, it is plain that the value of $\frac{ab}{b}$ is a. (Art. 110.) But this will become *negative* if the sign − is prefixed to the fraction. Hence, $y+\frac{ab}{b}=y+a$. But $y-\frac{ab}{b}=y-a$.

123. In performing fractional operations there is frequent occasion to remove the denominator of the fraction; also to incorporate a fraction with an integer, or with another fraction. In *each* of these cases, if the sign − is prefixed to the dividing line, *the signs of all the terms in the numerator must be changed*, as in Art. 66, where a parenthesis, having the sign − before it, is removed.

Thus $b-\frac{ad+ah}{a}=b-d-h$; and $b-\frac{ad-ah}{a}=b-d+h$.

Next, *if all the signs of all the terms in the numerator of a fraction are changed, the value of the fraction is changed in the same manner.* Thus $\frac{ab}{b}=+a$, (Art. 100;) but $\frac{-ab}{b}=-a$.

And $\frac{ab-bc}{b}=a-c$; but $\frac{-ab+bc}{b}=-a+c$.

Again, if all the signs of all the terms in the denominator of a fraction are changed, the value of the fraction is also changed.

Thus $\frac{ab}{b}=+a$; but $\frac{ab}{-b}=-a$.

124. *If then the sign prefixed to a fraction, or the signs of all the terms of the numerator, or the signs of all the terms of the denominator, be changed; the value of the fraction will be changed, from positive to negative, or from negative to positive.*

125. *If the same change be made upon the numerator and denominator of a fraction at the same time, they will balance each other, and the value of the fraction will not be altered.* Thus by changing the sign of the numerator, the fraction $\frac{ab}{b}=+a$, becomes $\frac{-ab}{b}=-a$. But by changing the signs of both the numerator and the denominator, it becomes $\frac{-ab}{-b}=+a$, where the original value is restored. By changing the sign before the fraction, the expression $y+\frac{ab}{b}=y+a$ becomes $y-\frac{ab}{b}=y-a$. But by changing the sign of the numerator also, it becomes $y-\frac{-ab}{b}$, where the quotient $-a$ is to be subtracted from y, or which is the same thing, (Art. 59,) $+a$ is to be *added*, making the value $y+a$ as at first. In like manner, $\frac{6}{2}=\frac{-6}{-2}=-\frac{-6}{2}=$

$-\frac{6}{-2}=+3$. And $\frac{6}{-2}=\frac{-6}{2}=-\frac{6}{2}=-\frac{-6}{-2}=-3$.

Hence the quotient in division may be set down in different ways and still have the same value. Thus $(a-c)\div b$, is either $\frac{a}{b}+\frac{-c}{b}$, or $\frac{a}{b}-\frac{c}{b}$.

Reduction of Fractions.

126. A fraction *may be reduced to lower terms, by dividing both the numerator and denominator by any quantity which will divide them without a remainder; or, by throwing out any factor common to both.* According to Art. 120 this process will not alter the *value* of the fraction.

Examples.

1. Reduce $\frac{ab}{cb}$ to lower terms. Ans. $\frac{a}{c}$.

2. Reduce $\frac{6dm}{8dy}$ to lower terms. Ans. $\frac{3m}{4y}$.

3. Reduce $\frac{7m}{7mr}$ to lower terms. Ans. $\frac{1}{r}$.

4. Reduce $\frac{a+bc}{(a+bc)\times m}$ to lower terms. Ans. $\frac{1}{m}$.

5. Reduce $\frac{am+ay}{bm+by}$ to lower terms. Ans. $\frac{a}{b}$.

127. If the same letter or combination of letters is in *every* term, both of the numerator and denominator, it may be *cancelled*, for this is *dividing* by that letter or combination of letters. (Art. 97.)

Examples.

6. Reduce $\frac{3am+ay}{ad+ah}$ to lower terms. Ans. $\frac{3m+y}{d+h}$.

7. Reduce $\frac{dry+dy}{dhy-dy}$ to lower terms. Ans. $\frac{r+1}{h-1}$.

128. If the numerator and denominator be divided by the *greatest common measure*, it is evident that the fraction will be reduced to the *lowest* terms.

1. Reduce $\frac{5a^4}{3a^2}$ to its lowest terms.

Here $\frac{5a^4}{3a^2}=\frac{5aaaa}{3aa}=\frac{5aa}{3}$. Ans.

2. Reduce $\frac{6x^6}{3x^5}$ to its lowest terms. Ans. $\frac{2x}{1}$.

3. Reduce $\frac{3a^4+4a^5}{5a^3}$ to its lowest terms. Ans. $\frac{3a+4a^2}{5}$.

4. Reduce $\frac{8a^3y-12a^2y^2+6ay^3}{6a^2y+4ay^2}$ to its lowest terms.

Ans. $\frac{4a^2-6ay+3y^2}{3a+2y}$.

5. Reduce $\frac{x^3+a^3}{x^2+2ax+a^2}$ to its lowest terms. Ans. $\frac{x^2-ax+a^2}{x+a}$.

6. Reduce $\frac{x^3-a^3}{ax-a^2}$ to its lowest terms. Ans. $\frac{x^2+ax+a^2}{a}$.

7. Reduce $\frac{8a^2-27b^2}{4a^2-9b^2}$ to its lowest terms. Ans. $\frac{4a^2+6ab+9b^2}{2a+3b}$.

8. Reduce $\frac{3x^5+2x^4-x^3-x^2+2x+3}{x^3-5x^2-5x+1}$ to its lowest terms.

Ans. $\frac{3x^4-x^3-x+3}{x^2-6x+1}$.

9. Reduce $\frac{x^4-x^2-2x+2}{2x^3-x-1}$ to its lowest terms. Ans. $\frac{x^3+x^2-2}{2x^2+2x+1}$.

10. Reduce $\frac{18x^4-5x^3+44x-5}{3x^4+20x^3-57x^2+80x-50}$ to its lowest terms.

Ans. $\frac{6x^2+8x-1}{x^2+8x-10}$.

11. Reduce $\frac{16x^4-53x^2+45x+6}{8x^4-30x^3+31x^2-12}$ to its lowest terms.

Ans. $\frac{4x^2+9x+1}{2x^2-3x-2}$.

12. Reduce $\frac{24x^5-22x^4-14x^3+24x^2-8x}{18x^5-18x^4-14x^3+30x^2-12x}$ to its lowest terms.

Ans. $\frac{4x^3-x^2-3x+2}{3x^3-x^2-3x+3}$.

LESSONS IN GREEK.—No. VII.

By John R. Beard, D.D.

THE THIRD DECLENSION.

The forms of the third declension in Greek are various, and can be learnt only by attentive practice. Some aid may, however, be given by means of classification.

The variations occur mostly in the singular number, and in the nominative and genitive case. The forms of the nominative singular, which are numerous, will appear as we proceed, and may therefore be omitted from this table of

The Case-endings of the Third Declension.

	Singular.	*Plural.*	*Dual.*
N.		ες	ε
G.	ος	ων	οιν
D.	ι	σι(ν)	οιν
A.	ν or α	ας	ε
V.		ες	ε

Neuter nouns have the nominative, the accusative, and the vocative alike. The student who is acquainted with Latin will readily see how much this Greek third declension corresponds with the Latin third declension.

The terminations given above are affixed to the stem. The stem is, in some words, the same as the nominative; thus λειμων, λειμων-ος, *a meadow*, where the ending ος is simply added to λειμων. In masculine and feminine nouns, however, the stem often appears in the nominative in an altered form. When the stem is so altered you must find it before you affix the case-endings to it. In order to find the stem, remove the genitive termination from the noun; what remains is the stem; *e. g.* κορακος (*of a crow*), the ος is the sign of the genitive, which being removed, leaves κορακ as the stem; and κορακ is, for the sake of euphony, lengthened in the nominative into κορακς, that is κοραξ; for the laws of sound in Greek endure at the end of a word only these consonants, namely, ν, ρ, σ, (ξ, ψ); the other consonants are either changed or thrown away. Hence the τ in the stem of Xenophon is dropped, as Ξενωφωντ-ος, Ξενοφωντ, Ξενοφων. Neuter nouns present the stem in the nominative. But when a word ends in τ, the τ is either discarded or changed into σ; as

Stem	*Nominative*	*Genitive*
πεπερι	πεπερι, *pepper*	πεπερι-ος
σωματ	σωμα, *body*	σωματ-ος
τερατ	τερας, *a prodigy*	τερατ-ος

The accusative has ν in masculines and feminines ending in ις, υς, αυς, and ους, the stems of which severally terminate in ι, υ, αυ, and ου, as

A City.

Stem πολι *N.* πολις *A.* πολιν

A Bunch of Grapes.

βοτρυ βοτρυς βοτρυν

A Ship.

Stem, ναν	*N. ναυς*	*A. ναν*

An Ox.

βον	*βους*	*βουν*

If the stem ends in a consonant, *α* instead of *ν* is found in the accusative, as *φλεβ, φλεψ, φλεβα, a vein*; *κορακ, κορακ, κορακ-α, a raven*; *λαμπαδ, λαμπας, λαμπαδ-α, a torch.*

The vocative is the same as the nominative or as the stem. The genders of the third declension are best learnt by practice.

The third declension may be distinguished from the first and the second by the fact that it adds a syllable to the nominative, while in them all the cases have the same number of syllables. Nouns which have the same number of syllables in all the cases are termed parisyllabic (in Latin par, *equal*), and nouns which lengthen the genitive and the cases derived from it, are termed imparisyllabic—Lat. im (in), *not*. Hence the first and second declensions are called parisyllabic and the third is called imparisyllabic.

In order to facilitate the acquisition of a knowledge of the nouns of the third declension, and to afford you thorough practice in them, I shall divide those nouns into several classes;*

1. Nouns whose Stem ends in a Consonant;

and of these I give in the first place

a. Nouns of which the Nominative gives the pure Stem.

The Case-endings are appended to the nominative.

	The Song of Victory.	*Meadow.*	*Xenophon.*	*Nectar.*
S.N.	ὁ παιαν	ὁ λειμων	ὁ Ξενοφων	το νεκταρ
G	παιαν-ος	λειμων-ος	Ξενοφωντ-ος	νεκταρ-ος
D	παιαν-ι	λειμων-ι	Ξενοφωντ-ι	νεκταρ-ι
A	παιαν-α	λειμων-α	Ξενοφωντ-α	νεκταρ
V	παιαν	λειμων	Ξενοφων	νεκταρ
P.N	παιαν-ες	λειμων-ες	Ξενοφωντ-ες	νεκταρ-α
G	παιαν-ων	λειμων-ων	Ξενοφωντ-ων	νεκταρ-ων
D	παιᾶ-σι	λειμω-σι	Ξενοφω-σι	νεκταρ-σι
A	παιαν-ας	λειμων-ας	Ξενοφωντ-ας	νεκταρ-α
V	παιαν-ες	λειμων-ες	Ξενοφωντ-ες	νεκταρ-α
D.N. A. V.	παιαν-ε	λειμων-ε	Ξενοφωντ-ε	νεκταρ-ε
G. D.	παιαν-οιν	λειμων-οιν	Ξενοφωντ-οιν	νεκταρ-οιν

The datives in full would be *παιανσι, λειμωνσι, Ξενοφωντσι*, but the *ν* is dropped before *σι* for the sake of euphony.

Απολλων, *Apollo*, Ποσειδων, *Poseidon* (in Latin *Neptune*), are declined thus: Απολλων, Απολλων-ος, Απολλωνι, Απολλων-α, also Απολλω-α and Απολλω, thus making the accusative singular in Απολλω; so Ποσειδω.

Απολλων, Ποσειδων, and σωτηρ, *a deliverer, Saviour*, have the short vowel in the vocative, as ω Απολλον, ω Ποσειδον, ω σωτερ.

The neuters of this subdivision end in ρ (αρ, ορ, ωρ, υρ), το πῦρ, *fire*, has του πῦρος.

Vocabulary.

Ἕλλην, ὁ, a Greek.
Θηρ, ηρος, ὁ, a wild beast.
Κρατηρ, ηρος, ὁ, a goblet, bowl.
Πυρ, ος, το, fire.
Χειρ, ος, η, the hand; dat. χερσι, dat. dual, χεροιν.
Ψην, ος, ὁ, a wasp.
Θαλια, ας, ἡ, a rich feast.
Καθαρα, ας, η, a harp.
Χορος, ου, ὁ, a choral dance.
Βιβλιον, ου, το, a book (*Eng.* Bible.)
Πλειστοι, ων, ὁ, very many.
Σπουδαιος, α, ον, earnest.
Ἀιδω, I sing.
Θαλλω, I bloom, flourish.
Γιγνωσκω, I know.
Αναγιγνωσκω, I know again, recognise, read.
Νιζω, I wash.
Τερπω, I delight, τερπομαι (with dat.) I am delighted.
Ἡδεως, pleasantly, with pleasure.

* This arrangement is taken from the *Elementargrammatik der Griechischen Sprache, von Dr. Raphael Kühner*, 13th edit., Hannover, 1852; to which most popular work, as well as to Dr. Kühner's Latin Manuals, the writer is much indebted.

Exercises.—Greek-English.

Φευγε τους θηρας. Χειρ νιζει. Απεχου του ψηνος. Οἱ λειμωνες θαλλουσιν. Οἱ στρατιωται ᾄδουσι παιᾶνα. Εν πυρι χρυσον και αργυρον γιγνωσκομεν. Πολλοι παρα κρατηρι γιγνονται φιλοι πλειστοι δε εχθροι. Οἱ ανθρωποι τερπονται κιθαρᾳ και θαλιᾳ και χοροις και παιᾶσιν. Οἱ Ελληνες τον Απολλω και τον Ποσειδω σεβονται. Οἱ σπουδαιοι μαθηται τα Ξενοφωντος βιβλια ἡδεως αναγιγνωσκουσιν.

English-Greek.

Avoid wild beasts. They avoid a wild beast. Wash the (thy hands). Keep ye from wasps. A soldier is delighted with the cry of victory. The cry of victory delights soldiers. O earnest scholars, read the books of Xenophon. The books of Xenophon are read by (ὑπο, g.) earnest scholars. We delight in beautiful meadows (d.). The meadows bloom. Poets worship Apollo. The poet worships Poseidon.

The adjectives which follow these nouns are—1, ὁ, ἡ απατωρ, το απατορ, *fatherless*, αμητωρ, αμητορ, *motherless*, the genitive is ορος: 2. ὁ ἡ αρρην, το αρρεν, *manly*; g. αρρενος: 3. adjectives in ων (m. and f.) ον (n.) as ὁ ἡ ευδαιμων, το ευδαιμον, *happy*, and the comparatives in ων, ον, ων, ον. These comparatives, after dropping the *ν*, suffer contraction in the accusative singular and in the nominative, accusative, and vocative plural. The vocative is the same as the nominative neuter.

Singular.

ὁ ἡ happy	*το*	*ὁ, ἡ more hostile*	*το*	*ὁ, ἡ greater*	*το*
ευδαιμων	ευδαιμον	εχθιων	εχθιον	μειζων	μειζον
ευδαιμονος		εχθιονος		μειζονος	
ευδαιμονι		εχθιονι		μειζονι	
ευδαιμονα	ευδαιμον	εχθιονα ἐχθιω	εχθιον	μειζονα	μειζον (μειζω)
ευδαιμον		εχθιον		μειζον	

Plural.

ευδαιμονες ευδαιμονα	εχθιονες εχθιονα (εχθιους) (εχθιω)	μειζονες μειζονα (μειζους) (μειζω)
ευδαιμονων	εχθιονων	μειζονων
ευδαιμοσι	εχθιοσι	μειζοσι
ευδαιμονας ευδαιμονα	εχθιονας εχθιονα (εχθιους) (εχθιω)	μειζονας μειζονα (μειζους) (μειζω)
Like the Nom.	*Like the Nom.*	*Like the Nom.*

Dual.

ευδαιμονε	εχθιονε	μειζονε
ευδαιμονοιν	εχθιονοιν	μειζοναιν

b. The Nominative has the short vowel of the stem lengthened, as ε into η, and ο into ω.

Stems in *ντ* drop the *τ* in the nominative; as λεων instead of λεοντ.

	Shepherd.	*Divinity.*	*Lion.*	*Ether (air).*	*Speaker (orator).*
S. N.	ποιμην	δαιμων	λεων	αιθηρ	ρητωρ
G.	ποιμεν-ος	δαιμον-ος	λεοντ-ος	αιθερ-ος	ρητορ-ος
D.	ποιμεν-ι	δαιμον-ι	λεοντ-ι	αιθερ-ι	ρητορ-ι
A.	ποιμεν-α	δαιμον-α	λεοντ-α	αιθερ-α	ρητορ-α
V.	ποιμην	δαιμον	λεον	αιθηρ	ρητορ
P. N.	ποιμεν-ες	δαιμον-ες	λεοντ-ες	αιθερ-ες	ρητορ-ες
G.	ποιμεν-ων	δαιμον-ων	λεοντ-ων	αιθερ ων	ρητορ-ων
D.	ποιμε-σι	δαιμο-σι	λεου-σι	αιθερ-σι	ρητορ-σι
A.	ποιμεν-ας	δαιμον-ας	λεοντ-ας	αιθερ-ας	ρητορ-ας
V.	ποιμεν-ες	δαιμον-ες	λεοντ-ες	αιθερ-ες	ρητορ-ες
D.N.A.V.	ποιμεν-ε	δαιμον-ε	λεοντ-ε	αιθερ ε	ρητορ-ε
G.D.	ποιμεν-οιν	δαιμον-οιν	λεοντ-οιν	αιθερ-οιν	ρητορ-οιν

Δαηρ, *a husband's brother*, makes in the vocative δαερ: Αμφιων (ονος) makes ω Αμφιον; also Αγαμεμνων (ονος) vocative Αγαμεμνον.

The following in ων (ονος) in some cases drop the *ν* and undergo contraction: ἡ αηδων, *the nightingale*, g. αηδονος, contracted into αηδους, d. αηδοι: ἡ χελιδων, *swallow*, g. χελιδονος, d. χελιδοι

Vocabulary.

Γερων, οντος, ὁ, an old man.
Ἡγεμων, ονος, ὁ, a leader, general.
Λιμην, ενος, a harbour.
Φρην, ενος (in pl. φρενες) the heart, soul.
Κολαστης, ου, ὁ, a punisher.
Δημος, ου, ὁ, the people (*Lat.* populus).
Ὁδος, ου, ἡ, a way.
Ἀδικος, ον, unjust (a priv and δικη, justice).

Σοφρων, ον, gen. ονος, sound-minded.
Ὑπερφρων, ὑπερφρον, g. ονος, high-minded, too high-minded, proud (ὑπερ, over).
Αγελη, ης, ἡ, a flock, herd.
Εαω, (d.) yield; — της ὁδου, get out of the way of.
Ολβιος, α, ον, happy.
Θεραπευω, I honour.
Ναιω, I inhabit, dwell.
Φυλαττω, I watch, guard, keep.
Ανευ (g.) without.

EXERCISES.—GREEK-ENGLISH.

Τον γεροντα θεραπευε. Σεβου τους δαιμονας. Οἱ ποιμενες αγελας φυλαττουσιν. Τον κακον φευγε ὡς κακον λιμενα. Ανευ δαιμονος ὁ ανθρωπος ουκ ολβιος εστιν. Ὁ θεος εν αιθερι ναιει. Πολλακις χαλεπαι μεμηναι τειρουσι τας των ανθρωπων φρενας. Ἑπου, ω φιλε, αγαθοις ἡγεμοσιν. Εικε, ω νεανια, τοις γερουσι της ὁδου. Πολλακις δημος ἡγεμονα εχει αδικον νοῦν. Ὁ θεος κολαστης εστι των αγαν ὑπερφρονων. Εχε νοῦν σωφρονα. Ω δαιμον, παρεχε τοις γερουσι καλην ευτυχιαν. Οἱ θηρευται τους λεοντας ενεδρευουσιν.

ENGLISH-GREEK.

Good boys honour old men. Old men are honoured by good boys. Sound-minded young men get out of the way of old men. Follow, O friends, a good leader. We have good leaders. The people often follow bad leaders. God affords prosperity to the sound-minded. Lions are hunted by huntsmen. We worship the divinity.

To the previous examples belong the following substantives in ηρ, namely ὁ πατηρ, *the father*; ἡ μητηρ, *the mother*; ἡ θυγατηρ, *the daughter*; ἡ γαστηρ, *the belly*; ἡ Δημητηρ, *Demeter* (*Ceres* in Latin); and ὁ ανηρ, *the man*; differing, however, from them in the omission of ε in the genitive and dative singular and in the dative plural; also in the interposition of α before σι of the dative plural, in order to soften the sound. The word ανηρ (*stem* ανερ), throws away the ε in all the cases of the three numbers, except the vocative singular, and for the sake of sound introduces a δ: as appears from this tabular view.

S. N.	πατηρ	μητηρ	θυγατηρ	ανηρ
G.	πατερ-ος	μητερ-ος	θυγατερ-ος	ανδρ-ος
D.	πατερ-ι	μητερ-ι	θυγατερ-ι	ανδρ-ι
A.	πατερ-α	μητερ-α	θυγατερ-α	ανδρ-α
V.	πατερ	μητερ	θυγατερ	ανερ
P. N.	πατερ-ες	μητερ-ες	θυγατερ-ες	ανδρ-ες
G.	πατερ-ων	μητερ-ων	θυγατερ-ων	ανδρ-ων
D.	πατρ-α-σι	μητρ-α-σι	θυγατρ-α-σι	ανδρ-α-σι
A.	πατερ-ας	μητερ-ας	θυγατερ-ας	ανδρ-ας
V.	πατερ-ες	μητερ-ες	θυγατερ-ες	ανδρ-ες
D. N.A.V.	πατερ-ε	μητερ-ε	θυγατερ-ε	ανδρ-ε
G.D.	πατερ-οιν	μητερ-οιν	θυγατερ-οιν	ανδρ-οιν

The word αστηρ, ερος, *a star*, which otherwise retains the ε of the stem, belongs to this class in consequence of having its dative plural in αστρασι.

VOCABULARY.

Περσεφονη, ης, η, Persephoné, Proserpine.
Αθλον, ου, το, a prize gained in the public games.
Σοφος, η, ον, wise.
Δουλευω, I am a slave, I serve.
Εχθαιρω, I hate.
Στεργω, I love.
Χαιρω (d.) I rejoice at, delight in.
Χαριζομαι, I show favour, gratify.

EXERCISES.—GREEK-ENGLISH.

Στεργετε τον πατερα και την μητερα. Μη δουλευε τη γαστρι. Χαιρε, ω φιλε νεανια, τω αγαθω πατρι και τη αγαθη μητρι. Μη συν κακω ανδρι βουλευου. Δημητρι πολλοι και καλοι νεω ησαν. Ἡ αγαθη θυγατηρ ἡδεως πειθεται τη φιλη μητρι. Οἱ αγαθοι ανδρες θαυμαζονται. Πολλακις εξ αγαθου πατρος γιγνεται κακος υιος. Εκθαιρω τον κακον ανδρα. Τοις αγαθοις ανδρασι λαμπρα δοξα ἑπεται. Ἡ Δημητρος θυγατηρ ην Περσεφονη. Ω φιλη θυγατερ στεργε την μητερα. Ἡ αρετη καλον αθλον εστιν ανδρι σοφῳ. Οἱ αγαθοι υιοι τους πατερας και τας μητερας στεργουσιν. Οἱ Ἑλληνες Δημητερα σεβονται. Πειθεσθε, ω φιλοι νεανιαι, τοις πατρασι και ταις μητρασιν. Χαριζου, ω φιλε πατερ, τη αγαθῃ θυγατρι.

ENGLISH-GREEK.

O young men, love your father and mother. Good daughters obey their (the) father and mother. The citizens worship Ceres. Persephoné follows Ceres. We admire the star. Be not ye, O huntsmen, slaves to the belly. A good mother loves a good daughter. O mother and father, love your children. The man is hated. They hate the man. They obey wise men. I follow Ceres. Often bad sons arise from a good father and mother.

REMARKS.

The Greek article has frequently the force of an English possessive pronoun, when, from the nature of the sentence, no mistake as to the meaning can arise. Consequently, in such cases, when you translate into English, give the possessive pronoun for the Greek article, and when you translate into Greek, give the article for the possessive pronoun.

SOLUTIONS.

[Although we have inserted a solution of Mr. Taylor's problem at p. 255, we are induced to add the following on account of its great ingenuity; besides, it gives some additional particulars of that problem.]

SOLUTION OF MR. TAYLOR'S QUESTION, p. 164, col. 1.

The areas of each person's share (a) being in proportion to the sums paid by them, the number of sixpences (s) in each sum will give these proportions in whole numbers, as follows; for their total being 1,600, we have $1600 : s :: 600 : a$, or $8 : s :: 3 : a$; and therefore $a = \frac{3}{8}s$. (1.)

Now let ABC, see fig., p. 255, col. 2, represent the triangular field, and CD its perpendicular. The length of CD is 24, AD 32, and DB 18. Also let p_1, p_2, p_3, &c., be the perpendiculars between A and D; and q_1, q_2, those between B and D. The length of the perpendiculars p_1, p_2, &c., will be in the same proportion to their distance from A, as CD is to AD, that is, as 24 is to 32, or as 3 is to 4. Now let x be the distance of any p from A, and y its height; then we have $3x = 4y$, and $xy = 2d$ (d being the area of the triangle formed by the said x and y); therefore from these two equations we have $x = \left(\frac{8d}{3}\right)^{\frac{1}{2}}$; and as $d = \frac{3}{8}$ s, where s denotes the sum of the sixpences in each triangle, it follows that $\frac{8}{3}x = s$, and $x = \sqrt{s}$. (2.)

The perpendiculars q_1, q_2, are in proportion to their distance from B, as CD is to DB, that is, as 24 is to 18, or as 4 is to 3; and, proceeding as before, having $4x = 3y$ and $xy = 2d$ we find $x = \left(\frac{3d}{2}\right)^{\frac{1}{2}}$; and as $d = \frac{3}{8}$ s, we have $x = \frac{3}{4}\sqrt{s}$. Lastly, the height of the perpendiculars p_1, p_2, being in proportion to their bases as 3 to 4, we have $p = \frac{3}{4}x$ and $q = \frac{4}{3}x$.

From these formulæ are derived the following rules for solution:—

1. To find each man's share of the field, take three-eighths of the number of sixpences paid by each.

2. To find the distance of the first perpendicular from the acutest angle of the field, take the square root of the number of sixpences in A's money.

3. To find the distance of the second, take the square root of the number of sixpences in A and B's money; of the third, the square root of the number in A, B, and C's money; and so on, up to the seventh perpendicular inclusive.

4. To find the distance of the last perpendicular from the *other* corner of the field. Having found the last share of the field by rule 1, take three-fourths of the square root of the number of sixpences in K's money.

5. To find the distance of the last but one from the same corner, take three-fourths of the square root of the number of sixpences in K and I's money; their two distances taken each from 50 will give the distances from the acutest angle of the field.

6. *To find the height of each perpendicular.* For the first seven, take three-fourths of their distance from the acutest angle for their height. For the last two, take $\frac{4}{5}$ of their distance from the *other* corner of the field for their height.

These rules give the following results:—

	Sum paid by each.	Share of each in square chains.	Distance of the perpendicular from acutest angle.	Height of perpendicular.
A	£2 17 6	$43\frac{1}{4}$	10·7238	8·0428
B	3 2 6	$46\frac{7}{8}$	15·4919	11·6189
C	3 7 6	$50\frac{3}{8}$	19·3649	14·5236
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PETER SIMPLE, Fleet-street.

CORRESPONDENCE.

CHEMISTRY.

SIR,—In your first lesson on Chemistry, you direct us to procure a quarter of a pound of the glass-tube termed "quilled." Now I have tried to get it everywhere in the town, and have been unsuccessful, as there seems to be no glass-tube known by that name in these parts. I have procured a barometer tube, but I know not whether that will do. If you will have the kindness to inform me what is meant by the term "quilled" in your next number, you will greatly oblige your attentive reader, WILLIAM DYER.

N.D. Infirmary, Barnstaple, Devon.

[The term "quilled" is applied to the thinnest variety of glass tubing. The diameter may be said, in general terms, to vary from that of a small tobacco-pipe-shank, or even smaller, to about half an inch. Barometer tubing is far too thick for several chemical purposes, and to work it requires practice and much address. We would suggest that, whenever possible, students working by these lessons should form class associations, and study in concert. Many advantages would result from this practice. One student may possess that which another requires. One student may see the rationale of a process which another does not immediately comprehend; and, more important still, the remembrance of phenomena would be impressed by discussion. There is yet another reason in favour of class associations, a reason which has reference to the future rather than the present. Qualitative chemistry does not require for its prosecution any expensive instruments: but quantitative chemistry requires a delicate balance, an instrument which cannot be procured for less than £20. Such an instrument may be readily purchased by an association, but the expenditure would be too great for many individuals.]

LESSONS IN MECHANICS.—No. XXIX.

WINDMILLS.

WINDMILLS, as the name implies, are mills driven by the wind. They consist of a basement of brick or stone, and a superstructure surmounted by a kind of dome capable of being turned round. The shaft of a wheel is projected from this dome, and to it are fastened four fan-like sails. These sails are made of bars of wood covered with canvas; they are so placed that when the wind blows upon them they are set in motion; and once in motion, they form a sort of fly-wheel to the machinery. The necessity for the movable dome arises from the sails being obliged to be shifted, so as to bring them into a proper position with regard to the wind, from whichever quarter it blows. This is sometimes done by ropes attached to the dome, but is more frequently effected by a small set of sails, placed at right angles to the large set, so that when the wind acts, as it should, on the large sails, the smaller ones are not affected; but if the wind shifts, these small ones begin to move, and they are connected by a shaft with a wheel acting upon a band which surrounds the dome, and which is toothed all round: so that as the wheel turns, it slowly alters the position of the dome, until the small sails cease to be acted upon, in which case the large ones front the wind, and are therefore in a position to be moved by it.

The most ancient mention we can discover of windmills is about the year 1105. It is probable that they originated in the East, and were introduced into France and England about the middle of the eleventh century. Our illustration represents a windmill of the sixteenth century. The engraving is taken from an ancient treatise on Geometry, printed in France in 1511 or 1512.

WATER MILLS.

Water is advantageously employed as a motive power; and among the mechanical contrivances to which it is applied, the water-wheel is perhaps the most familiar.

There are four different kinds of water-wheels in use: the overshot, the undershot, the breast, and horizontal.

THE OVERSHOT WHEEL.

In this variety of the water-wheel the force of the water is brought to bear on the upper part of the wheel, and sets it in motion by the following means:—

The wheel is provided with a number of buckets ranged round its circumference. The water is conveyed through a channel to the upper part of the wheel, and falling into the upper buckets, depresses them by the additional weight, and so communicates motion to the whole wheel. In the construction of these wheels there is a great opportunity for the engineer to exercise his inventive genius; the grand point to be attained is that of so arranging the buckets that they shall continue to hold the water in their descent so long as to give full impetus to the wheel, and shall discharge the water with so much ease and rapidity as to offer no impediment to the motion of the wheel as they are brought round again; they should, if possible, descend full, and come up empty.

THE UNDERSHOT WHEEL.

This wheel has a number of flat boards, instead of buckets, ranged round its circumference; they are so placed that the water, by falling upon them, causes the wheel to rotate. The water is conveyed to the lower part of the wheel by means of an inclosed channel or canal; the impulse of the water brought into immediate contact with the flat boards pushes them forward, and so communicates motion to the wheel. As one board is moved round, another, of course, takes its place; thus we have continued opposition continually overcome, and continuous motion imparted.

BREAST WHEEL.

A breast wheel presents its axis almost on a level with the surface of the water. It is provided with flat boards. The water approaches by a channel, and falls against or upon the first flat board, the point of contact being sometimes placed a little above, sometimes a little below the level of the axis. The mill course is a channel accurately fitted to the curve formed by the edges of all the flat boards, so that the space between any two boards forms a kind of box, which retains the water until the board has arrived near the lowest point; a sluice moved by a pinion regulates the quantity of water admitted to the wheel.

ON CIVILIZATION.

As Lessons in Chemistry, Natural Philosophy, and other new branches of knowledge are to be carried on with regularity and vigour from the commencement of next volume, we conclude the present with some remarks on the subject of civilization. The usual theory of civilization is, that man arose from the savage state to the civilized, through a long series of gradual steps in improvement, and continued for a vast number of ages. The *mutum ac turpe pecus** of Horace is the acme of this absurd opinion; and although many of our modern philosophers do not perhaps go so far as to look upon man as descended from a race of crawling animals, who fought at first with their nails and their fists for their acorns and their caves, yet they still believe that man was originally no better than an infant, and that he had everything to learn as he best could. The degraded and uncivilized state in which many of the South Sea Islanders are found living to this day, confirms them in this opinion; and the rude savageism of the natives of those islands in Australasia and Polynesia on which no European settlements have been formed, would seem to place it beyond a doubt. Take, for example, the island of New Caledonia, which is no less than 250 miles long and 60 miles broad, and has a population of perhaps 50,000. The character of the inhabitants is, according to D'Entrecasteaux, that of fierce fighters with one another, and devourers of human flesh. Other navigators have softened this sad picture; but the truth must be told. It is true that when the passions are not roused by some provoking circumstances, such savages in their common intercourse with one another and with strangers may exhibit some of the milder qualities of civilized life; but it is plain that their usual employments are plunder, rapine, and murder.

Seeing then, that the advocates of the original savageism of the human race have these living witnesses to demonstrate, as they think, the truth of their theory, it may now be asked what other theory can be proposed on this subject, and when proposed, how can it be supported? Admitting the existence of an all-wise, an all-good, and an all-mighty Creator, it does not appear *a priori*, that the original state of man could have been such as we have described; and that it would be revolting to our ideas of the wisdom, the power and the goodness of God, to imagine that man was created a savage. But we are not left to *a priori* reasoning in the matter. We have in our hands a document which men in all ages and in all nations have revered; a document which was penned by inspiration from heaven. This document teaches us a new and a better theory of civilization than the former; and not only better, but the only true theory that can be given. According to this document, it appears that man at first was created in the image or likeness of God; and that he held communion with his Maker, before he fell from that state in which he was created. This "likeness to God," spoken of in the document to which we have alluded, could not, of course, have consisted in his outward form or bodily appearance, for God is a Spirit, as the

A Scene in New Caledonia.

* The dumb and vile herd.

same document informs us. It must therefore have consisted in the likeness of the spirit of man to the spirit of God, but in an infinitely inferior degree; it consisted in a finite degree of knowledge, righteousness and holiness, such as became a created being. When God placed man in Eden and held communion with him there, it is plain that his knowledge must have been such as to render him fit to speak with God, since God condescended to speak with him; his righteousness must have consisted simply in his innocence, or freedom from the transgression of God's law, for God holds no man guiltless who breaks his law; and his holiness must have consisted in freedom from moral pollution, for God cannot look upon sin, much less can he have communion with the wicked.

Moreover, whatever was necessary to his comfort and well-being, both as to the necessaries of life and to his future happiness, he was taught by God to perform, while he lived in this innocent and contented state. But man fell from the holy and happy state in which he was created, by sinning against God. Now all was changed; man lost the image of God; he became vile and degraded. He was conscious that this change was his *own* fault; he hid himself. When he was discovered, his lips belied his heart. Notwithstanding his sin, God clothed him, and taught him how to clothe himself. God gave him work to do, and taught him how to do it. God laid the foundation of civilization, and taught man the arts and sciences. God did more than this, and wonderful was the deed! God laid the foundation of Christianity by giving the first sinner *the Protevangelium*, the first glad tidings of the Gospel. No doubt the arts and sciences are great civilizers of men, but Christianity is the GRAND CIVILIZER. Without Christianity we should fall into barbarism and become savages, with all our knowledge of the arts and sciences.

In proof of this assertion we have only to turn to the history of all the ancient empires that have ever existed in the world. Where is ancient Egypt, with all her primitive glory, and all her boasted knowledge of the arts and sciences? Gone, with the years before the flood! Where is Assyria, with all her early civilization, and all her knowledge of the most ennobling sciences? Entombed in the bowels of the earth, and only at the distance of thousands of years, just beginning to show her dead carcase above the surface! Where is Greece, with her mighty warriors, her glorious arts, her splendid sciences? Groaning under the tyranny of ages, or but emerging from the grasp of gross ignorance and horrid superstition and fanaticism? Where is Rome, the proud mistress of the world? But enough—we have said and shown enough to prove that the true source of civilization is Christianity, in the germ, in the bud, and in the full flower. Its beams have shone upon the world, and have lightened every land. Christianity has now opened the impenetrable gates of China, the mightiest empire the world ever saw, and has cast down to the ground the accumulated folly and stupidity of ages. China will soon be the great, the glorious, and the free; and three hundred and sixty millions of men, one-third of the human race, will be emancipated in a day by the invisible progress of Christianity. The passions of men will no doubt tarnish the glory of this revolution of revolutions, this one great wonder of the world in our day; but the truth is no less sure and certain. "I will overturn, overturn, overturn," said Jehovah, "until he come whose right it is, and I will give it him." The words of ancient prophecy are now being most wonderfully fulfilled; "Ask of me, and I shall give the heathen for thine inheritance, and the uttermost parts of the earth for thy possession." Christianity is the GRAND CIVILIZER, the only preserver and encourager of the Arts and Sciences, God himself being their founder. After this, our theory of Civilization is plain: God made man civilized, and taught him the arts and sciences. So long as man continued in the knowledge of the true God, and in communion with him, he retained the former; when he fell from that knowledge he lost them, and became savage! Witness the South Sea Islanders! Witness the aboriginal inhabitants of Malaysia and Australasia! Witness the North American Indians, the South American Indians, the Negroes of Africa, the Hottentots of the Cape, and the aboriginal inhabitants of all countries on the face of the globe. What were the Greeks and Romans, with all their boasted learning and skill? A set of civilized savages! What are the Hindoos, the Chinese, and the Japanese at the present day? Only civilized savages!

Restore Christianity, and the arts and sciences will flourish! Restore Christianity, and the nations will become civilized!

LESSONS IN ENGLISH.—No. LXVI.

By JOHN R. BEARD, D.D.

NOUNS.

VARIOUS FORMS OF THE SUBJECT OF A PROPOSITION.

WE now come to the noun *man* in our model sentence,

The sick *man* copiously drinks.

The noun *man* is the subject to the verb *drinks*. We thus see that a noun may be the subject of a proposition. Is there any other part of speech that may be the subject of a proposition?

1. An adjective may be the subject of a proposition; e. g.,

The sick drink.

But here it must be observed that for *drinks* I have substituted *drink*, the plural for the singular form of the verb. The rule then is, that *adjectives when used in the plural and preceded by the definite article may be the subject of a proposition.*

2. A pronoun may be the subject of a proposition; e. g.,

I, the sick man, drink.

Here *I* is the subject to the verb drink, as *I drink*; so we may say,

You, the sick man, drink.
I, you, we, they drink.

These additions to the subject modify the signification; and offer instances of what is called *apposition*. Apposition (from ad, *to*, and pono, *I place*) exists when a noun is added to a pronoun or a noun in order to explain the intended meaning. Thus here it is not *I* merely that drinks, but *I, the sick man*. Instead of a pronoun you may have a noun, as,

Alexander, the son of Philip, conquered Darius.

Apposition takes place in the object as well as in the subject; e. g.,

Wine overcame Alexander, *the son of Philip*.

3. An infinitive mood may be the subject of a proposition; e. g.,

To labour is pleasure.

Other words may be connected with the infinitive mood; as,

A noun. To drink *water* is pleasant.
A noun and adjective. To drink *good water* is wholesome.
A noun, adjective, and adverb. To drink *good water copiously* is wholesome.

4. A present participle may be the subject of a proposition; as,

Drinking is bad.

Drinking has here the force of a noun, while it retains also its participial force. That it is a noun is clear from its being the subject to the verb *is*. That it has also the force of a participle is clear from its power to govern an object; as,

Drinking *spirits* is bad.

As a noun, *drinking* may be qualified by an *article*, an adjective, and a personal pronoun; e. g.,

Article. *The* drinking was injurious.
Adjective. *Much* drinking is very injurious.
Pers. Pron. *His* drinking has been injurious to him.

Equally may the participial force carry with it words qualifying the object; as,

Drinking *pure water* is wholesome.
Drinking *even a glass of wine* may be blamed.

This last sentence presents a subject compounded of several words, for the subject to the verb *may* is the clause, *drinking even a glass of wine*.

Here is a clear and striking instance of the advantage of the term *subject* over the term *nominative* or *nominative case*. These words are the subject, but they are not the nominative of the verb *may*. The nominative case must be restricted to *drinking*.

I subjoin another example of this compound subject:—

Buying books which you do not read will not make you wise.

In this subject you have a sentence within a sentence; that is, the proposition is not a simple but a compound sentence, the included or subordinate sentence being *which you do not read*.

A past participle may be added to a present participle, so as to form the subject of a proposition; e. g.,

Being involved in debt drove him from his country.

Here too qualifying words may be introduced, as,

Being *greatly* involved in debt, &c.

The past participle itself cannot, however, be a subject to a proposition. We may indeed say,

Driven is a past participle;

but here *driven* is used in a general sense as a noun, and may have prefixed to it these terms, *the word*, as, "the word *driven* is a noun."

When this participial noun has the article connected with it, it in a measure loses its participial force, and, becoming a noun, is connected with a second noun by means of a preposition; e. g.,

The driving *of* the cattle was blamed.

With the noun, however, adverbs may be joined; e. g.,

The driving-*off* of cattle is a crime at law.

The subject in this last sentence is very complex, extending as it does to the verb *is*.

The two last sentences would, however, sound better and be more simple if the article and the preposition were dropped; e. g.,

Driving-off cattle is a crime at law.

The subject of a sentence is sometimes a proposition, or several words introduced by an adverb or a preposition. Such subjects are likely to give the learner trouble; I, therefore, give specimens, marking the words which form the several subjects.

Compound or Adverbial Subjects.

Subject.	*Predicate.*
That too much care can injure	is a dangerous doctrine.
By what means I may serve you	is unknown to me.
For a prince to be reduced	is a great calamity.

Agreement.

The compound subjects I have now laid before you contain instances of both agreement and government. They contain instances of agreement in,

1. *Much* drinking is very injurious.
2. Drinking *pure* water is wholesome.

In number 1. *much* is an adjective agreeing with the participial noun *drinking*, whose meaning it qualifies. In number 2. *pure* is an adjective agreeing with *water*, whose meaning it qualifies.

The instances of government which it is chiefly important to notice, are found in these propositions:

1. Drinking *spirits* is bad.
2. Drinking a *glass of wine* is not necessary.
3. Disturbing *the peace of the queen's subjects*.

In number 1. we have the simple case of the object depending on the verb, and the rule may be given as *the object of a proposition depends on or is governed by its verb.*

In number 2. we find the Norman or false genitive in the words *a glass of wine*, where the two nouns are connected by *of*, and the latter, namely *wine*, depends on or is governed by the preposition.

In the third sentence the words *queen's subjects* present an instance of the Saxon genitive, in which the former term *queen's* depends on or is governed by the term *subjects*; the rule may be laid down thus: *Of two nouns in immediate dependence, the former is in the genitive case.*

This last example contains an instance of both the Norman and the Saxon genitive, and that too in combination, as in the words,

The peace *of* the queen's subjects.

These two genitives may be indicated thus:—

The Saxon genitive. *Queen's* subjects.
The Norman genitive. The peace *of the subjects.*

For the Saxon genitive, the rule is that when two nouns come together the dependent noun is in the genitive case. Observe that the dependence is merely structural, as in "queen's subjects," the form *queen* becomes the form *queen's* by being dependent on subjects. You may state the rule thus also, *the possessive case is the case of the possessor*, as, *John's books*. Thus stated the relation is more than structural, for possession is a fact.

Instead of a noun, a clause, or several words, may govern the genitive case. Instances of this kind involve idioms that may be called peculiarly English, though similar constructions appear in Greek.

What is the reason of *this person's hasty dismissal* of his servants?

What is the reason of this *person's dismissing his servant* so hastily?

He prevented his *army's being enclosed.*

Possessive pronouns may hold the place of the genitive; as,

This is the last time of *my acting* so imprudently.

In this instance the pronoun agrees with the participle as if it were a noun.

Sometimes the idea of possession is wholly dropped, and the participle stands alone, either simply agreeing with a noun, or with a gerundial force; e. g.,

1. He produced an argument *against Moses being* the author of the Pentateuch.

2. Madam, what do you mean *by holding up your train?*

Participles sometimes occur as simple participles, when in truth they have the force and should have the construction of nouns, as in the following sentence:—

Wrong. "Cyrus did not wait for the Babylonians coming to attack him."—(*Rollin.*)

Right. Cyrus did not wait for the Babylonians' coming to attack him.

Compound or adverbial subjects require the verb in the singular number. Respecting pronouns considered as subjects, a few details are necessary. Pronouns that denote one person or object must have their verb in the singular number. Pronouns that denote more than one person or object must have their verb in the plural number. When two or more pronouns occur in one sentence, and refer to the same person or thing, they must be in the same gender, number, and person; e. g.,

I saw *my* dog bite the man.
She came to show me *her* bonnet.

But if different persons or things are intended, the proper pronouns must be employed; e. g.,

I saw *his* dog bite the man. She came to show me *your* hat.

The distributive pronouns each, every, whoever, &c., being singular in form, should have a verb in the singular number; they should also have corresponding pronouns in the singular number; e. g.,

Each man *is* coming for *his* wages.

"Every good gift and every perfect gift *cometh** down from above."—(James i. 17.)

Whoever comes, let *him* enter.

Inaccurate speakers are wont to put the second pronoun in the plural, saying,

Whoever comes, let *them* enter.

The error is the more to be guarded against, because *every one* &c., implies a number, and is nearly equivalent to *all*.

POSITION OF THE SUBJECT AND ITS AGREEMENT WITH THE VERB.

Position of the Subject.

The ordinary place of the subject is immediately before the verb, as,

The *sick man* drinks.

One word or more may intervene between the subject.

The subject, however, comes after the verb in questions, as,

Does the sick man drink wine?

2. With the imperative mood, as,

Go thou; *come* ye.

3. On the expression of a strong wish, as,

May they learn wisdom by what they suffer.

* An instance of two nouns combining to form one thought, and so putting the verb in the singular.

When the conjunction *if* is dropped :

Were my father alive, for "if my father were," &c.

5. With the conjunction *nor*, as,

Nor can your turpitude be denied.

6. In cases of emphasis :

Rich is the reward of the righteous.

7. After an adverb or adverbial phrase ; as,

After the infantry marched the grenadiers, *then* followed the horse.

8. With an interposed verb ; as,

"My children," *replied* the dying father, "I entreat you."

The imperative mood of the first and third person singular and plural, is formed with the assistance of *let* ; as,

Let him go ; *let* them eat.

Here it will be observed the pronouns are in the objective case. The reason is that *let* is really an independent verb, and as such governs the objects *him* and *them* in the objective case, *go* and *eat* being infinitives depending on *let*. This is the true analysis of such sentences.

An adverb, when it begins a sentence, puts the subject after its verb ; as,

"*There* will I plead with you face to face."—(Ezek. xx. 35.)

Yet by no means universally, as,

"There *they* buried Abraham and Sarah."—(Gen. xlix. 31.)

When, however, *there* is used as an expletive, the subject follows the verb ; as,

"*There* shall be no night there."—(Rev. xxi. 25.)

"An expletive" is a word which, according to its derivation, signifies *a word which fills* up or is redundant. A regard to idiom may sometimes require the retention of expletives.

Adverbial phrases have great force in causing the subject to take place after the verb.

LESSONS IN GERMAN.—No. LXVII.

Irregular Verbs, continued from p. 370.

INFINITIVE.	PRESENT INDICATIVE.	IMP. INDIC.	IMP. SUBJ.	IMPERAT.	PARTICIP.	REMARKS.
Flechten, to twist,	ich flechte, du flichtſt, er flicht	ich flocht	ich flöchte	flicht	geflochten.	
Fliegen *w*), to fly,	ich fliege, du fliegſt, er fliegt,	ich flog	ich flöge	fliege	geflogen.	*w*) Fleugſt and fleugt in the present, and fleug in the imperative are forms used only in poetry.
Fliehen *x*), to flee,	ich fliehe, ꝛc.	ich floh	ich flöhe	fliehe or flieh	geflohen.	*x*) Fleuchſt, fleucht and fleuch, poetical.
Fließen *y*), to flow,	ich fließe, ꝛc.	ich floß	ich flöſſe	fließe	gefloſſen.	*y*) Fleußeſt, fleußt and fleuß, poetical.
Fragen, to ask,	ich frage, du frägſt, er frägt	ich frug	ich früge	frage	gefragt.	
Freſſen, to devour,	ich freſſe, du friſſeſt or frißt	ich fraß	ich fräße	friß	gefreſſen.	
Frieren, to freeze,	ich friere, ꝛc.	ich fror	ich fröre	friere	gefroren.	
Gähren *z*), to ferment,	ich gähre, ꝛc.	ich gohr	ich göhre	gähre	gegohren.	*z*) Sometimes regular, gährte.
Gebären, to bring forth,	ich gebäre, du gebärſt (gebierſt) er gebärt (gebiert)	ich gebar	ich gebäre (geböre)	gebäre (gebier)	geboren.	
Geben *a*) to give,	ich gebe, du gibſt, er gibt	ich gab	ich gäbe	gib	gegeben.	*a*) Some writers prefer giebſt giebt, gieb, to gibſt, gibt, gib.
Gebieten *b*), to command,	ich gebiete ꝛc.	ich gebot	ich geböte	gebiete	geboten.	*b*) Gebeutſt, gebeut, poetical.
Gedeihen *c*), to prosper,	ich gedeihe, ꝛc.	ich gedieh	ich gediehe	gedeih	gediehen.	*c*) Gediegen is but a strengthened adjective form of the past participle.
Gefallen, to please,	ich gefalle, du gefällſt, er gefällt	ich gefiel	ich gefiele	gefalle	gefallen.	
Gehen *d*), to go,	ich gehe, ꝛc.	ich ging	ich ginge	gehe or geh	gegangen.	*d*) Gieng for ging is antiquated.
Gelingen, to succeed,	es gelingt	es gelang	es gelänge	gelinge	gelungen.	
Gelten *e*), to be worth, valid,	ich gelte, du giltſt, er gilt	ich galt	ich gälte	gilt	gegolten.	*e*) Formerly golt, gölte, were used in the imperfect indicative and subjunctive.
Geneſen, to recover,	ich geneſe, ꝛc.	ich genaß	ich genäſe	geneſe	geneſen.	
Genießen *f*), to enjoy,	ich genieße, ꝛc.	ich genoß	ich genöſſe	genieße	genoſſen.	*f*) Geneußeſt, geneußt, and imperative geneuß, poetical, seldom used.
Gerathen, to hit upon,	ich gerathe, du geräthſt, er geräht	ich gerieht	ich geriethe	gerathe	gerathen.	
Geſchehen, to happen,	es geſchieht, ꝛc.	es geſchah geſchahe	es geſchähe	geſchehe	geſchehen.	
Gewinnen, to gain, to win,	ich gewinne, ꝛc.	ich gewann	ich gewänne (gewönne)	gewinne	gewonnen.	
Gießen *g*), to pour,	ich gieße, ꝛc.	ich goß	ich göſſe	gieße	gegoſſen.	*g*) Geußeſt, geußt, and imperative geuß. See genießen.
Gleichen *h*), to resemble,	ich gleiche, ꝛc	ich glich	ich gliche	gleiche	geglichen.	*h*) Regular as an active verb, *to make similar, to compare.* Vergleichen, although active, is irregular.
Gleiten *i*), to glide,	ich gleite, ꝛc.	ich glitt	ich glitte	gleite	geglitten.	*i*) Geleiten and begleiten are not derived from gleiten, but from leiten, and are therefore regular.
Glimmen *k*), to shine,	ich glimme, ꝛc.	ich glomm	ich glömme	glimme	geglommen	*k*) Now more frequently regular.
Graben, to dig,	ich grabe, du gräbſt, er gräbt	ich grub	ich grübe	grabe	gegraben.	
Greifen, to seize,	ich greife, ꝛc.	ich griff	ich griffe	greife	gegriffen.	
Haben *l*), to have,	ich habe, du haſt, er hat	ich hatte	ich hätte	habe	gehabt	*l*) Handhaben is regular.
Halten, to hold.	ich halte, du hältſt, er hält	ich hielt	ich hielte	halte	gehalten.	

Irregular Verbs continued.

INFINITIVE.	PRESENT INDICATIVE.	IMP. INDIC.	IMP. SUBJ.	IMPERAT.	PARTICIP.	REMARKS.
Hangen *m*), to hang,	ich hange, du hängſt, er hängt	ich hing	ich hinge	hange	gehangen.	*m*) Hing, hinge are old forms. This verb must not be mistaken for hängen, to suspend, which is active and regular.
Hauen *n*), to hew	ich haue, ꝛc	ich hieb	ich hiebe	haue or hau	gehauen.	*n*) Haute (regular) is used when *cutting wood, carving stone, &c.* are meant.
Heben, to heave,	ich hebe, ꝛc.	ich hob or hub	ich höbe	hebe	gehoben.	
Heißen, to be named,	ich heiße, du heißeſt, er heißt	ich hieß	ich hieße	heiß or heiß	geheißen.	
Helfen, to help,	ich helfe, du hilfſt, er hilft	ich half	ich hülfe or hälfe	hilf	geholfen.	
Keifen *o*), to chide,	ich keife, ꝛc.	ich kiff	ich kiffe	keife or keif	gekiffen.	*o*) This verb is sometimes used as a regular verb.
Kennen, to know,	ich kenne, ꝛc.	ich kannte	ich kennete	kenne	gekannt.	
Klieben, to cleave,	ich kliebe, ꝛc.	ich klob	ich klöbe	kliebe	gekloben.	
Klimmen *p*), to climb,	ich klimme, ꝛc.	ich klomm	ich klömme	klimme	geklommen.	*p*) Sometimes regular, klimmte.
Klingen, to sound,	ich klinge, ꝛc.	ich klang	ich klänge	klinge	geklungen.	
Kneifen, or	ich kneife, or kneipe, ꝛc.	ich kniff or knipp	ich kniffe or knippe	kneife or kneipe	gekniffen or geknippen.	*q*) Kneipte, gekneipt is more frequently used.
Kneipen *q*), to pinch,						
Kommen, to come,	ich komme, du kommſt, er kommt, or du kömmſt, er kömmt	ich kam	ich käme	komm	gekommen.	
Können, to be able,	ich kann, du kannſt, er kann	ich konnte	ich könnte		gekonnt.	
Kriechen *r*), to creep	ich krieche, ꝛc.	ich kroch	ich kröche	krieche or kriech	gekrochen.	*r*) Kreuchſt, kreucht kreuch, obsolete. Only poetically used.
Kühren *s*), to choose,	ich kühre, ꝛc.	ich kohr	ich köhre	kühre	gekohren.	*s*) Kühren is entirely antiquated, wählen having taken its place.
Laden, to load,	ich lade, du ladeſt, or ladſt, er ladet or ladt	ich lud	ich lüde	lade	geladen.	
Laſſen *t*), to let,	ich laſſe, du laſſeſt er läſſet (läßt)	ich ließ	ich ließe	laſſe or laß	gelaſſen.	*t*) Veranlaſſen is regular.
Laufen, to run,	ich laufe, du läufſt, er läuft	ich lief	ich liefe	laufe, lauf	gelaufen.	
Leiden *u*), to suffer,	ich leide, ꝛc.	ich litt	ich litte	leide	gelitten.	*u*) Verleiden, to disgust, is regular.
Leihen, to lend,	ich leihe, ꝛc.	ich lieh	ich liehe	leihe	geliehen.	
Leſen, to read,	ich leſe, du lieſeſt, er lieſet (lieſt)	ich las	ich läſe	lies	geleſen.	
Liegen, to lie down,	ich liege, ꝛc.	ich lag	ich läge	liege	gelegen.	
Lügen, to lie,	ich lüge, ꝛc.	ich log	ich löge	lüge	gelogen.	
Mahlen *v*), to grind,	ich mahle, du mahleſt, (mählſt) er mahlt (mählt)	ich mahlte (mühl)	ich mahlete or mühle	mahle	gemahlen.	*v*) Except the past participle gemahlen, no irregular form is in use.
Meiden, to avoid,	ich meide, ꝛc.	ich mied	ich miede	meide	gemieden.	*w*) Sometimes regular. Müſſt &c. rarely used.
Melken *w*), to milk,	ich melke, du melkſt or milkſt, er melkt or milkt	ich molk	ich mölke	melke	gemolken.	
Meſſen, to measure,	ich meſſe, du miſſeſt, er miſſet or mißt	ich maß	ich mäße	miß	gemeſſen.	
Mißfallen, to displease,	ich mißfalle, du mißfallſt, er mißfällt	ich mißfiel	ich mißfiele	mißfalle	mißfallen.	
Mißlingen, to go amiss,	es mißlingt	ich mißlang	es mißlänge	mißlinge	mißlungen.	
Mögen, to be able,	ich mag, du magſt, er mag, wir mögen, ꝛc.	ich mochte	ich möchte	—	gemocht.	
Müſſen, to be obliged,	ich muß, du mußt, er muß, wir müſſen, ihr müſſet, or müßt, ꝛc.	ich mußte	ich müßte	—	gemußt.	
Nehmen, to take,	ich nehme, du nimmſt, er nimmt	ich nahm	ich nähme	nimm	genommen.	

LESSONS IN GEOLOGY.—No. XLI.

By Thomas W. Jenkyn, D.D., F.R.G.S., F.G.S., &c.

CHAPTER IV.

ON THE INFLUENCE OF ATMOSPHERIC AGENTS ON THE EARTH'S CRUST.

SECTION VIII.—ON ICEBERGS.

§ i, ON THE FORMATION AND THE DRIFTING OF ICEBERGS.

Our last three lessons have instructed you in the formation and the operations of glaciers. The diagrams have explained to you, in a very graphic and striking manner, how glaciers extend from high glens among the ridges of the Alps down to the lower vales where orchards and vineyards are cultivated. Still, what you have learnt about glaciers in the Alps, or among any inland mountains, will give you no idea of an iceberg. In order to have an accurate conception of an iceberg, imagine that a glacier-valley runs down to the sea-shore, and that the glacier pushes its icy body to a considerable distance into the sea. Then, by a change in the temperature of the season, and by the action of the sea upon the glacier that has invaded its bosom, an immense mass of the glacier is snapped, and an enormous fragment of ice is separated from the parent glacier and begins to float. It is this snapped or loosed fragment of ice, as large as a mountain, that is called an iceberg.

All navigators who have sailed to polar regions, whether to the north or to the south, have borne witness to the extreme rapidity with which these icebergs are formed. When a mass of ice has been separated from a glacier, or from an icy barrier, it drifts away with the waves, and is again broken into many pieces. From the accumulation of snow which falls upon its upper surface, such a mass assumes a flat or table-topped shape, and continues to increase in height. As these successive layers of snow accumulate, the iceberg becomes more heavy, and consequently sinks deeper into the sea.

This accession of layers is formed not by snow only, but also by frozen rain, and even by the dense fogs which prevail in high latitudes. The American navigator Wilkes relates, that when he was near the south pole, ice had accumulated on the riggings and spars of his ship to the thickness of a quarter of an inch, in the course of a few hours, though neither rain nor snow fell at the time. The icebergs, therefore, are at all times on the increase; for there are but few days in such climates in

which some mode of precipitation does not take place, and where ice seldom melts. As even in summer the temperature is rarely above the freezing point, icebergs, a thousand feet thick, would require but a few years to form.

Navigators frequently meet with floating icebergs in all stages of formation, rising from five feet to 250 feet above the surface of the sea, and exposing their stratification in horizontal layers from six inches to four feet in thickness. When they are fully formed they have a tabular or stratified appearance, have their sides perfectly perpendicular, and vary in height from 180 to 210 feet above the waves. The magnitude of such icebergs will be better conceived when you consider that, the mass of ice below the water is nearly eight times greater than what is seen above. In some cases it is ten and even fifteen times greater.

The number of these icebergs is as astonishing as their dimensions. Scoresby counted 500 of these icebergs drifting in latitudes 69° and 70° north, and these were from 100 to 200 feet high. In Baffin's Bay, Captain Ross saw several of them aground in water fifteen hundred feet deep. Every four or five years a large number of icebergs float from Greenland and are stranded on the west coast of Iceland. In the Antartic regions, "the sight of the icebergs around us," says Lieut. Wilkes, "all of large dimensions, was beautiful. The greatest number in sight was found to be more than a hundred, varying from a quarter of a mile to three miles in length."

When icebergs are met with in low latitudes, the whole of their outward aspect is found to have been altered by the distance, and by the different temperatures, through which they have floated. Sometimes they are apparently much worn, by the action of the sea, into cavities, and exhibit large fissures as though they were ready to fall in pieces. Others exhibit lofty arches of many coloured tints, arches that lead into deep caverns open to the swell of the sea, which rushing in with impetuosity produces a sound like a loud and distant thunder. These caverns worn in the perpendicular sides of the icebergs, appear the more strange, as in some cases, the flight of birds in and out of them, remind the navigator of ruined abbeys, dilapidated castles, and mountain caves. Icebergs that have been long afloat, lose the tabular form and the stratified aspect which they had when they first started from the parent ice-field or glacier. At starting, these tabular icebergs were like vast mountains of beautiful alabaster. But, through the influence of increased temperature and by the action of the waves, they have the appearance of an immense city, with houses built of alabaster grouped together, with long lanes and streets, but now in ruins,—the Palmyra of the ocean. As their distance from the pole increases, the upper surfaces of the tabular icebergs incline at a considerable angle towards the horizon. This inclination is caused by a change which the abrading action of the waves produces on the position of the centre of gravity. In their decayed state, they rarely exhibit any signs of stratification, but appear as if they had been formed of soft and porous ice; though, at other times, the ice seems as hard as flint. In many cases their upper surface indicates that by the motion of the sea they have been completely overturned.

The process of their dissolution is frequently very rapid. On the coast of Newfoundland, for instance, these floating islands of dazzling crystal, are seen every year to melt away in the warm waters supplied by the gulph stream of the Atlantic, and they disappear in a few weeks.

The magnificent dimensions and the awful movements of these icebergs, as found afloat, render an inquiry into their formation and origin interesting. It is well known that the glens and ravines of the islands of Spitzbergen are filled up with solid ice, which has been accumulating for many ages. It is probable that the glaciers of polar regions began in the snows of winter. The summer suns melted the surface of this snow, and the water, thus produced, penetrated into the snow beneath, and, by saturating it, increased its density. The successive winters froze this glacier into a mass of porous ice, and superadded fresh layers of snow. These processes being repeated every summer and winter, changed the lowest stratum of the melted snow into dense and transparent ice. Centuries upon centuries, of alternate summers and winters, completed their operations in the production of icy aggregations of prodigious dimensions.

Icebergs formed by land glaciers, and before they begin to float, appear near the sea-shore like enormous mountain cliffs. Scoresby saw one iceberg of this kind, that was eleven miles in length and four hundred feet in height above the level of the sea at the water's edge, but towards the middle it attained the height of sixteen hundred feet. The upper surface of a land iceberg is generally somewhat hollow, and the hollow is, during summer, filled with pools or lakes of the purest water. This water often wears channels for itself through the substance of the ice, and sometimes falls over the edge in the form of a cataract. Lieut. Wilkes found such an iceberg near the south pole, in the centre of which he found a large pond of most delicious water which rested under a scum of ice about ten inches thick. From this natural reservoir his ship was supplied with five hundred gallons of water, and about twelve times that quantity was left behind in the hollow surface of the iceberg.

You have already been informed that the ice of these bergs is porous and fissured. The water that is formed on the surface will necessarily percolate through the pores of the iceberg. When this water becomes frozen in these pores and fissures, it expands with irresistible force, and tears off immense fragments from the outer edge, which, with accelerated velocity, fall with an awful crash into the sea. A similar result is produced by the action of high spring tides which, lashed by frequent storms, rush into the fissures at the bottom and in the sides of the icebergs, undermine portions of the base, and shiver the awful mass into huge fragments, which float away as separate icebergs.

In the Arctic regions, a little to the north of Horn Sound, there is a fixed iceberg which occupies eleven miles in length of the sea coast. It rises precipitously from the sea, with a side perfectly smooth, to the height of above four hundred feet. It extended back towards the summit of the mountain, to about four times that elevation. These fixed icebergs become slowly corroded by the salt water, whose temperature has been raised by the Gulph stream. As the ice of glaciers in the polar valleys is still pressing downward from behind, the mass projected into the sea can no longer support its own weight; it therefore snaps off, plunges into the deep sea, and splits into several masses, forming as many icebergs. Sea currents waft them towards different coasts. The great glaciers generated in the valleys of Spitzbergen, in 79° of north latitude, are almost all cut off at the beach. But in Baffin's Bay on the west coast of Old Greenland, where the temperature of the sea is not mitigated by the waters of the Gulph stream, the glaciers stretch out from the shore, and furnish repeated crops of mountainous masses of ice which, when dislocated from the parent glacier, float off into the ocean.

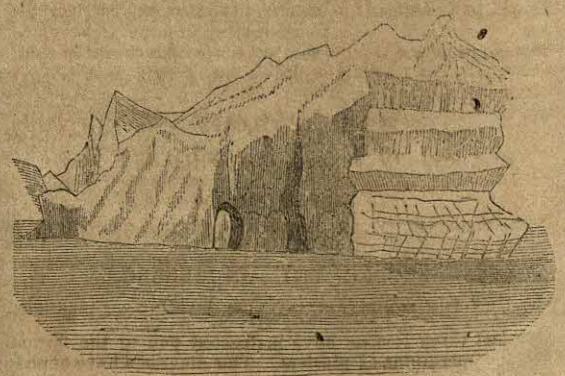

Fig. 94. *Iceberg seen in Baffin's Bay.*

In Terra del Fuego, Mr. Darwin found lofty mountains covered by a wide mantle of perpetual snow, and in many parts magnificent, glaciers which extended from the mountain side to the water's edge on the sea-shore. The fragments which had fallen from one of these glaciers into the sea were floating away, and the channel, with its icebergs, presented, for

the space of a mile, a miniature likeness of the Polar Sea. In that country, a range of mountains of only the height of Ben Lomond or Snowdon, that is, from 3,000 to 4,000 feet high, have every valley filled with glaciers descending to the coast. Almost every arm of the sea, which penetrates into the interior of the higher chain, not only in Terra del Fuego, but on the coast for six hundred and fifty miles northwards, is terminated by tremendous glaciers. Great masses of ice frequently fall from these icy cliffs, and the crash of their fall reverberates through the lonely channels, like the broadside of a man-of-war.

In the Arctic regions, the icebergs are snapped from the glaciers of the polar valleys by increased temperature, and by the action of spring tides; but in Terra del Fuego, Mr. Darwin observed that this severance is sometimes produced by earthquakes. As earthquakes frequently cause masses of rock to fall from sea cliffs, the effects of these agents must be terrific on a body like a glacier, already in motion, and traversed by fissures. It can be readily imagined that by such an earthquake shock, the water of an arm of the sea would be fairly beaten back out of the deepest channel. This water would then return with an overwhelming force, and whirl about large masses of rock as if they were mere grains of chaff. In Eyre Sound there were seen about fifty icebergs floating outwards at one time, and one of them must have been *at least* 168 feet in total height. In the gulph of Penas, in lat. 46° 50′, a glacier was found fifteen miles in length, and in one part seven miles broad, which reached to the seashore.

The distance to which icebergs are floated is as remarkable as their magnitude. In the northern hemisphere their extreme limit is lat. 40°, and they are occasionally seen in lat 42° N. near the termination of the great bank of Newfoundland, and at the Azores, in the same latitude, to which they are sometimes drifted from Baffin's Bay. In the southern hemisphere, icebergs, within the last five years, have been seen at different points off the Cape of Good Hope, between latitudes 36° and 39°. One of these was two miles in circumference and 150 feet above the water, appearing like chalk when the sun was obscured, and looking like refined sugar when the sun shone upon it. Others rose even to 300 feet above the level of the sea, they must, therefore, be of great volume below. These two facts from the northern and southern hemispheres show that the area, over which the effects of moving ice may be experienced, comprehends a large portion of the globe.

A knowledge of these facts connected with the formation of icebergs, and the distance to which they are drifted, is of great importance in geology. The application of these facts will be more fully explained in our next lesson. You have seen that as polar glaciers extend themselves not only to the sea coast, but also to a considerable distance in the sea, not only do the glaciers, in their descent from the glens and ravines, bring down stones and boulders, as was represented in our lessons upon glaciers, but the ice that stretches into the sea upon the coast must lay hold upon the masses of rock that lie at the bottom of such a frozen sea. When an iceberg is snapped from the parent glacier and floats, its lower surface takes up, as it rises in the water, the blocks and stones which it had imbedded when in the process of being formed. As such icebergs, charged with the fragments which the glacier had brought down from the polar mountains, and loaded with the blocks which have adhered to their lower surface, become drifted to lower latitudes and warmer seas, they melt away and deposit their loads of blocks and gravel at the bottom of the sea, or on the sides of banks, on which they have stranded. The application of these facts to the explanation of the phenomena of drifted gravel and erratic blocks, is called by geologists the Glacial Theory, and by some the Glacio-aqueous theory.

"Are mists begotten? who their father knew?
From whom descend the pearly drops of dew?
To bind the stream by night, what hand can boast?
Or whiten morning, with the hoary frost?
Whose pow'rful breath, from northern regions blown,
Touches the sea, and turns it into stone?
A sudden desert spread o'er realms defaced,
And lays one-half of the creation waste?"

LESSONS IN FRENCH.—No. LXXVII.

By Professor Louis Fasquelle, LL.D.

118.—Use of the Tenses.—The Present of the Indicative.

(1.) This tense denotes what exists, or is taking place at the time we speak:—

Je lis; vous parlez.	*I read; you speak.*

(2.) The French have only one form of the indicative present:—

Je lis means, therefore, *I read, do read,* or *am reading.*

(3.) The indicative present is used in French has well as in English, for expressing things which are and will always be true:—

Dieu *est* éternel, sa puissance *est* sans bornes, et sa clémence *est* grande. Girault Duvivier.	*God is eternal, his power is boundless, and his clemency is great.*

(4.) It is often used to express a proximate future:—

Je *suis* de retour dans un moment. Molière.	*I shall be back in a moment.*
Si Titus a parlé, s'il *l'épouse*, je pars. Racine.	*If Titus has spoken, if he marries her, I go (will go).*

(5.) The present is frequently used for the past, to awaken attention, and place the event, as it were, before the reader:—

J'ai vu, Seigneur, j'ai vu votre malheureux fils, Traîné par les chevaux que sa main a nourris: Il *veut* les rappeler, mais sa voix les *effraie*. Racine.	*I saw, my lord, I saw your unfortunate son dragged by the horses which his own hand has fed; he wishes to recall them, but his voice frightens them.*

§ 119.—The Imperfect.

(1.) The imperfect, or simultaneous past, is used to express something which was in progress, while another thing was taking place. It leaves the beginning, duration, and end of an action undetermined:—

J'écrivais, quand je reçus votre lettre.	*I was writing, when I received your letter.*

(2.) The French imperfect, as may be seen in the above example, represents the English past tense formed of the auxiliary *to be*, and the participle present of a principal verb.

(3.) The imperfect is also used to express repeated or customary action. It may then often be rendered in English by the infinitive of the verb preceded by "used to":—

Lorsque *j'étais* à Londres, *j'allais* me promener le matin, ensuite je *dînais*, et je *passais* le reste de la journée à lire et à écrire.	*When I was in London, I walked (used to walk) in the morning, afterwards dined (usually dined), and spent (usually) the remainder of the day in reading and writing.*

(4.) The use of this tense will be further explained in the next Section.

§ 120.—The Past Definite.

(1.) The past definite indicates an action performed at a time entirely past:—

J'allai à Londres, où je *vis* votre père; je *finis* mes affaires dans cette ville, et *revins* aussitôt ici.	*I went to London, where I saw your father; I finished my business in that city, and returned hither immediately.*
M. un tel *écrivit* hier au soir un sixain à Mademoiselle une telle. Molière.	*Mr. such-a-one wrote last evening six verses to Miss such-a-one.*

(2.) The past definite can only be used, as we have seen above, when the time at which an action took place is entirely elapsed. We cannot, therefore, use it in connexion with the words *to-day, this morning, this week, this month, this year,* &c. [*See* § 121, Past Indefinite.] We may use it in speaking of *yesterday, last week, last year,* &c.:—

Je vous envoie, mon cher frère, une lettre que *j'écrivis* hier pour Madame de Laval. Fénélon.	*I send you, my dear brother, a letter which I wrote yesterday for Madame de Laval.*

(3.) The imperfect may almost always be rendered in English by the participle present of the verb and the auxiliary *to be*; or by prefixing "*used to*" to the infinitive mood. The preterite definite can never be so rendered.

(4.) The imperfect might be called the *descriptive* tense of the French.

(5.) The past definite might be called the narrative tense. It expresses that which took place at some time fully past. We will endeavour to illustrate this difference between these two tenses.—A traveller has entered a wood and discovered a retired cottage; he wishes to describe what he saw there, and makes use of the imperfect or descriptive tense; he says:—

Un vieillard *se promenait* sous les arbres; *il tenait* un livre à la main; de temps en temps, il *élevait* les yeux vers le ciel, ou les *couvrait* de la main, et *semblait* s'abîmer dans une profonde rêverie. Devant la porte de la cabane *était* assise une femme qui *berçait* un enfant sur ses genoux; elle *était* pâle; ses cheveux *flottaient* au gré du vent; des larmes *coulaient* le long de ses joues, &c.	*An old man was walking* under the trees; *he held* (was holding) *a book in his hand*; *from time to time he raised his eyes towards heaven, or concealed them with his hand, and seemed to sink into a profound revery. Before the door of the hut, sat* (was sitting) *a female rocking* (who was rocking) *a child on her knees*; *she was pale*; *her hair waved* (was waving) *at the mercy of the wind*; *tears flowed* (were flowing) *down her cheeks.*

The traveller has here drawn a picture of what presented itself to his eyes as he approached the cottage. Not content with representing merely the then present situation of things, he wishes also to narrate what took place. He has described the theatre on which the occurrence took place, which he is going to relate; he now proceeds to the narrative, and uses the past definite or narrative tense:—

Je *m'approchai* du vieillard; lorsqu'il *m'aperçut*, il *s'avança* vers moi, *me salua*, et me *pria* de ne pas troubler cette paisible retraite du malheur. Il *retourna* à la cabane, *prit* l'enfant des bras de la femme, et *rendra*; elle le *suivit*, &c.	*I approached the old man*; *when he perceived me he came towards me, greeted me, and besought me not to disturb this peaceful retreat of the unfortunate. He returned to the cottage, took the child from the woman's arms, and went in*; *she followed him.*

Another example might be taken from La Fontaine's well-known fable:—

LE CORBEAU ET LE RENARD. Maître corbeau sur un arbre perché, *Tenait* en son bec un fromage; Maître renard, par l'odeur alléché, Lui *tint* à peu près ce langage.	THE RAVEN AND THE FOX. *Master raven perched upon a tree,* *held* (was holding) *in his beak a cheese*; *master fox, attracted by the smell, addressed him nearly in the following words.*

Here the poet uses the imperfect of *tenir* in describing the situation in which the fox found the raven, but in relating the action of the fox, La Fontaine uses the narrative tense of the same verb.

The commencement of the first book of *Télémaque* offers an excellent illustration of what we have here advanced on the use of the imperfect and the past definite.

§ 121.—The Past Indefinite.

(1.) The past indefinite expresses an action entirely completed, but performed at a time of which some part is not yet elapsed, as, *to-day, this month, this year*, &c.:—

Le roi m'a *nommé aujourd'hui* archevêque de Cambray. FÉNELON.	*The king appointed me to-day archbishop of Cambray.*
Ce matin *j'ai trouvé* le pavé si glissant, que *j'ai pensé* que si je venais à tomber sur le bras droit, je serais tout à fait désemparé. BERNARDIN DE ST. PIERRE.	*This morning I found the street so slippery, that I thought in case I happened to fall on my right arm, I should then be completely helpless.*
Je t'ai défendu (see (1.) below) cent fois de racler ton méchant violon; cependant, je t'ai entendu ce matin.—Ce matin? Ne vous souvient-il pas que vous *me le mîtes* [§ 120 (2.)] hier en pièces? PALAPRAT.	*"I have forbidden thee a hundred times to scrape thy wretched violin; nevertheless, I heard thee this morning."* "This morning! Do you not recollect that you broke it to pieces yesterday?"

(2.) The past indefinite is also used with regard to a time entirely past, but not specified:—

Les fruits de la terre *ont été* la première nourriture des hommes. GIRAULT DUVIVIER.	*The fruits of the earth were the first aliments of mankind.*
Les Français *ont gagné* la bataille de Marengo.	*The French gained the battle of Marengo.*

(3.) When the time is specified and entirely elapsed, the past indefinite is by many of the best French writers used indifferently with the past definite:—

Past Definite.	*Past Indefinite.*
Huit jours après son départ, il m'*écrivit* une lettre. BERNARDIN DE ST. PIERRE.	Je vous *ai écrit*, il y a quinze jours. THE SAME.
A week after his departure, he wrote me a letter.	*I wrote to you a fortnight ago.*
Je *fus* bien fâché hier, ma chère cousine, de vous avoir quittée avec tant de précipitation. FÉNELON.	Hier en travaillant à mon quatrième dialogue, *j'ai éprouvé* un vrai plaisir. MIRABEAU.
I was very sorry yesterday, my dear cousin, for having left you in so much haste.	*Yesterday, while working at my fourth dialogue, I experienced real pleasure.*

(4.) When the first verb of a sentence is put in the past indefinite, every other verb of that sentence, and of the sentences referring to it, should be in the same tense:—

Où *avez-vous été*? J'*ai* d'abord *été* à l'église, ensuite je *suis* venu dîner.	*Where have you been?* *I first went to church; and then came home to dinner.*

§ 122.—The Past Anterior.

The past anterior expresses what took place *immediately* before another event which is also past: the latter event being usually the result of, or dependent upon the former:—

Quand *j'eus reconnu* mon erreur, je fus honteux des mauvais procédés que j'avais eus pour lui. GIRAULT DUVIVIER.	*When I had perceived my error, I was ashamed of my bad conduct towards him.*

See (3.) of the § below.

§ 123.—The Pluperfect.

(1.) The pluperfect marks an event not only past in itself, but as past with regard to another past event:—

J'avais déjeûné, quand vous vîntes me demander. GIRAULT DUVIVIER.	*I had breakfasted, when you came to inquire for me.*

(2.) The pluperfect having as its auxiliary the imperfect of the verbs *avoir* or *être*, partakes of the signification of that tense. It may, therefore, often be used to denote customary action:—

Dès que *j'avais* lu quelques pages, je me promenais.	*As soon as I had read a few pages, I used to take a walk.*

In such cases, it generally precedes or follows another verb in the imperfect.

(3.) When the action is not a customary one, and the sentence commences with one of the adverbs, *quand, lorsque, aussitôt que, dès que*, &c., the past anterior is generally used:—

Dès que *j'eus lu* quelques pages, je sortis.	*As soon as I had read a few pages, I went out.*

§ 124.—The Two Futures.

(1.) The future simple is used to signify what will be, or will take place, at a time not yet come:—

Votre frère *partira* demain.	*Your brother will go to-morrow.*

(2.) The future is used, in French, after an adverb of time, in cases where the English use the present of the indicative:—

Quand vous *viendrez*, vous apporterez mon livre.	*When you come, you will bring my book.*

(3.) It has sometimes the sense of the imperative in sentences like the following:—

Croire qui *vendra* l'historien Capitolin et quelques autres écrivailles qui font danser les éléphants sur la corde. FÉRAUD.	*Believe who will the historian Capitolinus and several other writers, who make elephants dance on a rope.*

(4.) The future anterior is used to signify what will have

been at a future period; it is also used after an adverb of time in cases where the perfect definite is used in English:—

Quand j'aurai fini mes affaires, je vous irai voir. GIRAULT DUVIVIER.	*When I have finished my affairs, I will go and see you.*

§ 125.—THE TWO CONDITIONALS.

(1.) The conditional present denotes what would take place under a certain condition:—

Nous goûterions bien des jouissances, si nous savions faire un bon usage du temps. GIRAULT DUVIVIER.	*We should have many enjoyments, if we knew how to make a good use of time.*

(2.) The conditional past denotes what would have taken place, at a time past, if the condition on which it depended had been fulfilled:—

Il serait allé à la campagne, si le temps le lui avait permis.	*He would have gone into the country, if the weather had allowed him.*

(3.) The two futures, and the two conditionals, cannot, in French, follow the conjunction *si*, meaning *in case that*. The indicative present is then used instead of the future, and the imperfect instead of the conditional. This rule is often violated by the French, but seldom by the Americans or English who have acquired a good knowledge of the French language.

§ 126.—THE IMPERATIVE.

(1.) The imperative is used to express a command, exhortation, permission, or entreaty:—

Connais-moi tout entière. CORNEILLE.	*Know me entirely.*
Ah! demeure, seigneur, et daignez m'écouter. RACINE.	*Ah! remain, my lord, and deign to listen to me.*
Ne tardons plus, marchons; et s'il faut que je meure, *Mourons.* RACINE.	*Let us tarry no longer; let us proceed; and, if I must die, let us die.*

§ 127.—THE SUBJUNCTIVE.

(1.) The subjunctive is the mode of doubt or indecision:—

Veut-il ce que vous qu'on *Obéisse* un jour. VOLTAIRE.	*Obey, if thou wishest that one day others may obey thee.*

(2.) A verb, which is governed by the conjunction *que*, must be put in the subjunctive mode in French, though it may be in the indicative or conditional in English:*—

1. When the part of the sentence, which precedes *que*, being interrogative or negative, expresses a doubt:—

Pensez-vous que vous réussissiez dans cette affaire?	*Do you think that you will succeed in this affair?*
Je ne voudrais pas assurer qu'on le dise ainsi. BOILEAU.	*I would not affirm, that it should be so said.*
Croyez-vous qu'il vienne?	*Do you believe he will come?*

2. When the verb preceding *que* expresses *command, entreaty, doubt, desire, surprise, wish, duty, necessity, fear, apprehension*:—

Je permets, je souhaite, je doute, je veux, j'ordonne, je suis surpris que vous veniez.	*I permit, I wish, I doubt, I desire, I order, I am surprised, that you may or should come.*
Dis en même moment, ordonnez que je parte. RACINE.	*Order, that I may depart this very moment.*
Tu veux qu'on te fasse voir croyions l'impossible. CORNEILLE.	*Thou wishest that for thy sake we may believe in impossibilities.*
Je suis ravi, que nous soyons ensemble. DESTOUCHES.	*I am delighted that we happen to live together.*

3. When the first verb expresses fear or apprehension, the verb preceded by *que* must also be preceded by *ne*:—

Je crains, je tremble, j'appréhende, j'ai peur, qu'il ne vienne. GIRAULT DUVIVIER.	*I fear, I tremble, I apprehend, I am afraid he may come.*

(3.) The pronouns *qui, que, lequel, dont*, and the word *où*, meaning in which, should be followed by the subjunctive, when that part of the sentence which precedes them expresses an interrogation, or implies a wish, a doubt, or a condition. They must also be followed by the verb in the subjunctive when they are preceded by a superlative relative [§ 14, (9.)]:—

Y a-t-il quelqu'un qui ne respecte la maîtresse?	*Is there any one who does not respect mistress?*
La meilleure chose que vous puissiez faire.	*The best thing that you can do.*
Choisissez une retraite où vous soyez tranquille.	*Choose a retreat in which you may enjoy repose.*

(4.) A verb preceded by *que*, and one of the impersonal verbs *falloir, importer, convenir, suffire, valoir, mieux*, or by the verb *être*, used impersonally in connexion with the adjectives *fâcheux, juste, injuste, surprenant, possible*, or with *à propos, temps, à désirer, à souhaiter*, &c., must be put in the subjunctive [see S. 72, R. 1.]:—

Il faut que vous veniez.	*You must come, or it is necessary that you should come.*
Il est temps que vous partiez pour Rome.	*It is time that you should go to Rome.*
Il me me plaît pas, que vous alliez là. L'ACADÉMIE.	*It does not please me that you should go there.*
Il n'est pas certain, que vous ayez raison.	*It is not certain that you are right.*

(5.) After the expressions *quelque . . . que, qui, que, si . . . que, quoique*, the verb is always put in the subjunctive:—

Quelqu'effort que fassent les hommes, leur néant paraît partout. BOSSUET.	*Whatever effort men may make, their nothingness appears everywhere.*
Qui que ce soit, parlez et ne le craignez pas. RACINE.	*Whoever he may be, speak, and do not fear him.*
Si mince qu'il puisse être, un chevet fait de l'ombre. VERMENIL.	*However thin it may be, a bed has a shadow.*

(6.) For the other conjunctions which must be followed by the subjunctive, see § 143.

A KEY TO THE EXERCISES IN THE LATIN LESSONS.

By JOHN B. BRAND, D.D.

(*Continued from page 349, Vol. III.*)

Page 167, vol. I, vol. II.

Esop's Fables.

THE DOG GIVEN TO BITING.

The father of a family ordered a brass bell to be hung to the neck of a dog which was given to biting, in order that all persons might avoid him. But he was rejoiced at the tinkling of the brass, and, as if it were a reward for his excellence, began in consequence to despise other dogs in comparison with himself. "How an old dog said to him, "Thou fool! dost thou not know that by the tinkling thy bad habit of biting is proclaimed?" This fable is written against those who take pleasure in the infamy of their degrees.

THE DOG AND THE WOLF.

A wolf seeing a well-fed dog, said, "How happy you are! you, it seems, live heavily while (or) I am worn down with hunger." The dog replied, "You may, if you will, come into the town with me, and enjoy the same good fortune." The wolf accepted the offer, and they go along together, the wolf notices that the hair is worn off the dog's neck. "What," asked he, "is this? Do you wear the yoke? why, your whole neck is bare." "It is nothing at all," answered the dog. "Only sometimes they tie me up to make me more watchful by night, and those are the marks of the collar with which they put round my neck." Then the wolf spoke and said, "Farewell, my friend! I have no taste for happiness which must be purchased with my freedom." This fable shows that to the free no advantage can be sufficiently valuable to compensate for the calamity of servitude.

THE WOLF AND THE CRANE.

A bone once stuck in the throat of a wolf. He therefore hired a crane to extract it. This the crane easily did with the aid of her long neck. But when she asked for her wages, the wolf, smiling and gnashing his teeth, said, "Surely you are not ill paid in being allowed to draw your head uninjured out of the jaws of a wolf."

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* When two verbs are united by the conjunction *que*, the subject is put in the indicative, if the first expresses something certain, positive:—

On m'assure que vous avez reçu hier une lettre de votre père.	*They assure me that you have received a letter from your father.*

The Husbandman and the Snake.

A husbandman found a snake which was almost dead from cold. Moved with pity, he cherished the animal and put it into his bosom. The snake was soon restored; when recovering its strength, it inflicted a deadly wound on the man in return for his benefit. This fable shows what return the ill-disposed are wont to make for the favours they receive.*

Page 321, col. 2, vol. II.—Latin-English.

A painting adorns the house; we salute our parents; I have asked for my book; the stars surpass the earth in magnitude; men are satisfied with food; this sparrow has been killed by a hawk; the human body is best strengthened by labour; we are loved by God, and we have always been loved by him; often is an army saved by the valour of one soldier; kings were formerly created by the people; the wretched console themselves with the hope of better times; elephants of a very large size wander in the forests and on the mountains of India; chariots are driven four in hand; Coelius, as he kept saying, went to Cæsar; the mind which consists of air on fire, seeks loftier (regions); he frequently supped alone at my father's; the hawk is accustomed to drive about trembling doves; there is a hope that we are about to be hungry; all in joy obey the command and execute the orders; thou thyself wilt begin to fear lest thou shouldst bring danger on an innocent man; he chooses smiths from the legions, and orders others to be sent for from the continent; of what good man did he ever speak ill? he spoke favourably? Yes! what good and brave citizen has he not most impudently assailed? I wish you to come to me; they went into the island; how foolish is it, when you have received the signal for battle, to brandish your arms! Juba (not juba) the king's son flits about before their eyes; it is not easy for a human being to fly with wings.

Page 321, col. 2, vol. II.—English-Latin.

Picturis domus ornatur; volant aves; volitant aves; pennis volare possum; mihi, innocenti, periculum fecit; duci benedixit; edendine est spes? hostem agitat; in sylvâ vagatur elephas; bonos Deus amat; boni a Deo amantur; magnitudine terra stellis superatur; a parentibus salutamur; matrem salutavit puer; a rege arcessitus sum; ducem arcessivit rex; virtute exercitum liberavit dux; bonorum sapientiâ virorum mundus servatur; avunculi jussa juvenis facessit; cibo satiaris; labor agricŏlam roborat (or labor durat agricŏlam); labore durantur agricolae; passerem necavit accipiter; olim populus creavit reges.

Page 349, vol. II.—Latin-English.

Pythagoras travelled over Egypt, visited the priests of the Persians, and traversed on foot many barbarous lands; when the armies were on the point of joining battle, the commander-in-chief rode round the lines and exhorted the soldiers; after the river had been passed, a terrible fight began; he who despises death avoids death; there are many words and kinds of aspect which become the actor, not the orator; he is a true friend who conceals nothing from us; no poet seems to have been able to imitate Homer; the Tarquins devastated that part of the Roman territory which lay next to Etruria, on which account the Romans declared war against them; Sylla was the first that entered the city of Rome in arms; we are aware that the light which we enjoy, and the breath which we draw, are given us by God; Cicero relates that there were two Roman knights who promised Catiline to murder him (Cicero) by night; ambition is certainly a vice, nevertheless we often see it to be the mother of virtues; hope, full of belief, supports our life, and constantly declares that things will be better to-morrow; Viriathus carried on war against the Romans for fourteen years; Pythagoras was the first to pronounce himself a philosopher, that is, a lover of wisdom; Mount Olympus is very high; every animal is mortal; my father scolded me; geese do not fly; diligent men labour; good men love their parents and relatives; husbandmen in spring sow the seed; have you the books you want? lofty mountains check the force of the winds; the sun and moon fill the whole earth with their light; the leaves of this tree flourished in summer; we sit at banquets but the ancient Greeks and Romans reclined on couches; the world has been filled with various kinds of good by God; he fears many who is feared by many; the air is always in movement, but if it is moved violently, wind arises; a good man confesses his sins and does not conceal them; we cannot look at the sun with unclosed eyes.

Page 349, vol. II.—English-Latin.

Regina invisit Scotos; bona omnia a Deo hominibus data esse intelligitis? se contra Catilinam orationem habuisse narrat Cicero; pater patriae dictus est Cicero; Cicerone ait se patrem patriae dictum esse? honestum est dici patrem patriae; qui pater patriae dici vult, eum decet esse sapientissimum nobilissimumque; coenati cubitum ibimus; Tarquinienses quum devastassent partem agri Romani, eis bellum Romani indixerunt; quis poetarum Homerum imitavit unquam? primus Homerus longum poema scripsit; bonis mundum implevit Deus; eane bonum decent? Persarum sacerdotes visitati sunt a Pythagore, qui multas terras peragravit; exercitum circumequitabit dux et milites hortabitur; verusne tibi est amicus? invenire verum amicum est difficile; mali perdifficile esse verum invenire amicum confirmant; boni a bonis amantur; totus mundus solis ac lunae repletus est luce.

Page 363, col. 2, vol. II.—Latin-English.

Athens was a city; Romulus was a king; Bactra, the chief place of the district, lay under mount Paropamisus; Leonidas was king of the Spartans; Jugurtha led an army which attended to land and cattle rather than to war; money is a queen; pleasures are very winning mistresses; flatterers are a very base race of men; twenty ships, the fleet of the Romans, were impelled by oars; Pompey, our dear friend, will come; Corinth, the sun of all Greece, has been rased; death is the end of all things; Carthage and Corinth, most opulent cities, were overturned; not the sword but gold conquered the Lacedemonians, the bravest of mortals; philosophy, the discoverer of truth, is also the guide of character and discipline.

Page 363, col. 2, vol. II.—English-Latin.

Thebae, Boeotiae caput, sitae sunt sub monte Cithaerone; Londinum Angliae est caput; magistra Angliae est Londinum; aliarum virtutum generatrix est frugalitas; Scythi, bellicosissimi homines, pisce vescuntur; omnium mortalium bellicosissimi sunt Scythae; victor omnium nationum est Populus Romanus; totius mundi caput erat Roma; Athenae olim artium erat domicilium, et nutrix philosophiae ac eloquentiae.

Page 364, col. 2, vol. II.—Latin-English.

I have taken up that defence which first offered itself to me; these are the opinions respecting friendship; we declare this war against thee, O Roman youth (put a comma after tibi and another after Romana); my life is as dear to me as thine to thee; physicians are unable to cure themselves; how long will that madness of thine elude us? he trusts in this letter of mine that he will be well received by thee, a benevolent man; that notorious Catiline now lies cast on the ground; this Marcellus here, our friend, was present at the conversation; Catullus was instructed not after the old-fashioned way, but after the way we pursue; a certain peace is better than a hoped-for victory; the former is in thy hands, the latter is in the hands of the gods; sloth weakens the body, labour strengthens it; the former produces a premature old age, the latter a long youth; in which of us does not the famous (read ille) Epaminondas dying at Mantinea, excite delight mingled with admiration? Mithridates fled out of his kingdom in the way in which the notorious Medea is said to have formerly fled from the same (country of) Pontus; three hundred of us formed a conspiracy; these faults of character belong to old age; Epicurus (for he is your light) denies that any one can live happily who does not live honourably; Thebes, which is the chief city of Boeotiae, was in great confusion; the united abodes which we call cities; of arms and the man I sing who first came to Italy; we speak of those friends that are known in ordinary life; of the number of those who were consuls during those years, many are dead; if, as must indeed be, our native land affords us delight; I who give thee assurance cannot give myself any; the spot on which they first landed, is called Troy; I have received the letter which you sent me; we alone have the regulation of those very violent impulses which nature produced; in the same year Cumae, a city which the Greeks then held, is taken by the Campanians; it happened that it was full moon—a season which commonly renders the tides very great in the sea; Cæsar was aware that the day was at hand on which corn must be supplied to the soldiers; I hope, such is your prudence and temperance, that you now, as we wish, are in good health.

Page 365, col. 1, vol. II.—English-Latin.

Trecenti conspiravere; floret Londinum, Angliae caput; Athenae, Graeciae caput, deletae sunt; qui primus mihi lapis oblatus est accepi: Wellingtonus (Vellingtonus) ille jam in terrâ jacet; qui honeste vivit, vivit jucunde; omnem, qui tuus est honor, tibi do dedoque pecuniam; mala, id quod expectandum erat, bellum indictura intulit multa; quo tibi moriendum, dies est proximus; qui alios doces tu te docere non potes; soli in animalia quae creavit Deus potestatem habent homines; quam plurima sunt a Deo creata animalia; apud te, virum honestissimum, me fore gratiosum spero; quas ad te misi literas anne accepisti? quas mater misit literas pater accepit.

* Slight deviations from verbal closeness have been permitted for the sake of the English usage and as an example to the student.

Page 382, col. 2, vol. II.—LATIN-ENGLISH.

I prefer Cneius Pompey to all men that ever existed, and P. Lentulus (I prefer) to myself; all naturally love themselves; Junius put himself to death; I know that these things were said as I declare (them); thou art the person who hast often done me honour; I am the person to think it better to yield to Caesar than for battle to be joined (the standards to be brought together); let that same wise man pass over to protect the republic; who had been a diligent scholar of Carneades himself; those are ridiculous who endeavour to teach others that which they themselves have never learned (by experience) and do not know; that person himself confessed (it); that same (character), the tyrant, is a most disgraceful species (of men); those who obey the divine laws live according to nature; he cannot be called a magnanimous man, who hesitates to unite his own safety with the safety of the republic; I reproach myself; often those who please themselves most, most displease others; whatever is honourable is also useful; those very men grant that all things I have said are true; musicians who formerly were also poets; I a brave man, as well as a philosopher, have considered life a very delightful thing; that was a splendid as well as a humorous speech; I shall ask of you to consider that what I say I say not of myself but of the (character of the) orator; I do not abound in talent, so as to console thee when I am unable to console myself; ignorance of those things, from which (ignorance) alone terrible fears are often born; Themistocles was banished by his fellow-citizens; Fabius is loved by me on account of his very great humanity; I know God from his works; God is known from his works; Cicero hears not what posterity says respecting him; surely Cicero does not affirm that posterity will say much evil of him?

Page 382, col. 2, vol. II.—ENGLISH-LATIN.

Illi ipsi confessi sunt; qui confessus sum mortem expecto; amicum tibi anteponis et idem te maxime diligis; tu es ille sapiens quem ego ipse et nos omnes audire cupimus; ipsi se vituperant; qui se ipsos vituperant, sapientes evadere possunt; quicquid bonum, idem est utile; ille stultus idemque benignus te ut ipsum cures orat; te ipsum consolare; me consolati sunt et idem sunt miseri; Aristides a suis civibus pulsus est patriâ; Aristides et cives ejus natu erant Hellenes; ancilla deripuit togam, qua operuit sororis cadaver; mariti, togâ dereptâ, cadaver rite combussit mulier; ipsi se amant omnes; ipse me amo; haud sapienter amant se qui potissimum se ipsi curant.

CORRESPONDENCE.

ARITHMETICAL CURIOSITIES.

A correspondent, HENRY HALLETT, *Bridport*, calling himself an *Invalided* Poet, has sent us the following Arithmetical Curiosities, which we insert for the sake of some of our younger readers, in order to set them a-thinking.

1.—Place the numbers from 1 to 5 in five little squares, as in the two following diagrams, and you will find that by adding the numbers diagonally, their sums will be the same; namely, 9 in fig. 1, and 10 in fig. 2.

Fig. 1.

1		2
	3	
4		5

Here, $1+3+5=9$,
And, $2+3+4=9$.

Fig. 2.

1		2
	5	
3		4

Here, $1+5+4=10$,
And, $2+5+3=10$.

Omit the middle figure in these squares, and you will find that by adding them diagonally, their numbers will still be the same; namely, 6 in fig. 1, and 5 in fig. 2. For, $1+5=4+2=6$; and $1+4=3+2=5$.

2.—Place all the 9 digits in a square form, fig. 3, each in little squares, and you will find that by adding the numbers diagonally, horizontally in the middle row, and vertically in the middle column, their sum will be the same, namely, 15 either way.

Fig. 3.

1	2	3
4	5	6
7	8	9

Here, $1+5+9=15$,
$3+5+7=15$,
$4+5+6=15$,
And, $2+5+8=15$.

Also, leaving out the middle figure, the same result will take place; for $1+9=3+7=4+6=2+8=10$. Moreover, the product of the middle figure by the figure at the end of the first row, is the same as the former sum, namely 15; for $3\times5=15$; and the square of the figure at the end of the first row is equal to the figure at the end of the last row; for $3\times3=9$.

3.—Place all the numbers from 1 to 25 in a square form, fig. 4, each in little squares, and you will find that by adding these numbers diagonally, horizontally in the middle row, and vertically in the middle column, their sum will be the same, namely 65 either way.

Fig. 4.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

Here, $1+7+13+19+25=65$,
$5+9+13+17+21=65$,
$11+12+13+14+15=65$,
And, $3+8+13+18+23=65$.

Also, leaving out the middle figure, the same result will take place; for, $1+7+19+25=5+9+17+21=$ &c., the sum being 52. Moreover, the product of the middle number by the number at the end of the first row is the same as the former sum, namely, 65; for $5\times13=65$.

The ingenious student is left to prosecute this subject for himself, in relation to the square forms, commencing with units, and terminating in the squares of the odd numbers, viz., 49, 81, &c., and he will find that the same results will take place, so that he will be able to draw general rules or conclusions regarding all such squares; these rules will ultimately assist in the higher inquiries relating to the formation of magic squares of the odd numbers.

4.—Place all the numbers, from 1 to 4, in a square form, fig. 5, in little squares, and you will find that when the numbers are added diagonally, their sum will be the same, namely 5.

Fig. 5.

1	2
3	4

There is no middle number here to multiply by the figure at

the end of the first row; but if you take the mean of those placed diagonally either way, that is, of 1 and 4, or of 3 and 2, viz., $2\frac{1}{2}$, and multiply it by the figure at the end of the first row, the product will be equal to the former sum, namely 5; for $2 \times 2\frac{1}{2} = 5$.

5.—Place all the numbers, from 1 to 16, in a square form, fig. 6, in little squares, and you will find that by adding the numbers diagonally, either way, their sum will be the same, namely 34. As in the square form, commencing with unity and terminating in the squares of even numbers, there is no middle row taken horizontally, and no middle column taken vertically; if you take the mean of the sums of the two middlemost rows taken horizontally, and of the two middlemost columns taken vertically, you will find these means the same as the sums of the diagonal rows, namely 34.

Fig. 6.

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

Here, $1 + 6 + 11 + 16 = 34$,
and $4 + 7 + 10 + 13 = 34$;

Also, $5 + 6 + 7 + 8 = 26$, and $9 + 10 + 11 + 12 = 42$, } mean 34.

Likewise, $2 + 6 + 10 + 14 = 32$, and $3 + 7 + 11 + 15 = 36$, } mean 34.

As there is no middle number in this square, it must be treated like the preceding one; take the mean of those numbers placed diagonally around the middle point, either way, and multiply it by the number at the end of the first row, and you will find the product the same as the former sum, namely 34; for, $\frac{1}{2}(6 + 11) = 8\frac{1}{2}$; or $\frac{1}{2}(7 + 10) = 8\frac{1}{2}$; and $4 \times 8\frac{1}{2} = 34$.

6.—Place all the numbers, from 1 to 36, in a square form, fig. 7, in little squares, and you will find that by adding the numbers diagonally, either way, their sum will be the same, namely 111. For the same reason, as before, take the mean of the sums of the two middlemost rows taken horizontally, and of the two middlemost columns taken vertically, and you will find these means the same as the sums of the diagonal rows, namely 111.

Fig. 7.

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

Here, $1 + 8 + 15 + 22 + 29 + 36 = 111$,
and $6 + 11 + 16 + 21 + 26 + 31 = 111$.

Also, $13 + 14 + 15 + 16 + 17 + 18 = 93$, and $19 + 20 + 21 + 22 + 23 + 24 = 129$, } mean 111;

Likewise, $3 + 9 + 15 + 21 + 27 + 33 = 108$, and $4 + 10 + 16 + 22 + 28 + 34 = 114$, } mean 111.

Taking the mean of the numbers placed diagonally around the middle point of this square, as before, we have $\frac{1}{2}(15+22) = 18\frac{1}{2}$; or, $\frac{1}{2}(16+21) = 18\frac{1}{2}$; whence $18\frac{1}{2} \times 6 = 111$, the same sum as before.

The student will, in the case of the squares commencing with unity and terminating in the square of the even numbers, as 64, 100, &c., find the same results as have just been shown, so that he will be able to draw general conclusions regarding all such squares; and these rules will in like manner assist him in the inquiries relating to the formation of magic squares of the even numbers.

In the preceding account of Mr. Hallett's discoveries (new to himself, but not to mathematicians), we have made such additions as will render the subject easier and more interesting to the younger and more ingenious classes of our readers. —Ed.

ANSWERS TO CORRESPONDENTS.

This space being appropriated for answers to questions on Educational matters, correspondents on personal or general subjects—J. S. C., T. U. R., Treville, A Limerick Student, Juvenis, H. Smith, and others—should address their questions to *Cassell's Illustrated Family Paper*.

A Disciple of Vitruvius.—See our articles on Architecture in preceding numbers.

Guerrier.—Your letter is well expressed, and neatly written. The correspondent to whom you refer appears to us every way worthy of credit, and to publish your strictures would only provoke a personal controversy, which would be very undesirable.

Thomas H. should apply to the director of one of Her Majesty's dockyards.

Phono: We are sorry we cannot supply the information you require.

A Young Geologist.—The mountain limestone is rich in zoophytes, including corals; and several hundred different kinds of shells, taking into account both fresh water and sea species, have been discovered in it. Until very recently it was supposed that no animal higher in organisation than a fish had existed in the coal period; neither frogs, tortoises, snakes, nor lizards having been discovered. In 1847 the skeletons of reptiles were, however, found in the coal works near Strasburg, and there appeared every reason for believing that these creatures properly belonged to the coal period.

Deux Etortes.—Your letter shall have our best attention.—J. E. H.: A "Key to the Lessons in French" is published separately, price 1s.; post free, 1s. 1d.

Latinus: "Beard's Latin Dictionary" will be forwarded to you, per post, on receipt of 10s. 6d. The postage is 10d.—G. D. (Aberdeenshire): No question inclosed.

F. C.—Twins signifies two at a birth; the expression *two* twins is a pleonasm.

A Youth of Seventeen.—Mutual Instruction Societies are frequently the means of bringing forward many a young man, who, without their help, would remain all his life in obscurity. It is not so much the actual amount of information which is obtainable at any one meeting; it is the habits of thought and observation, of reading and of speaking, which is engendered by them, that constitute their chief advantage—the putting in motion of the mental machinery. Care should be taken in the selection of topics for discussion; but almost any subject admits of a good deal of reading, thinking, and talking. It would be prudent on your part to assist in the establishment of a society of the kind, and supposing eighteen or twenty other young men would join you, the expense would be light. There should be a secretary and chairman; the former annually elected, the latter appointed from the members in rotation. The duties of the treasurer might be joined with those of the secretary. It is probable that the treasurer's post would be almost a sinecure. The meetings might be varied by discussions, original essays by members, intellectual readings and recitations, &c. We have known societies of this kind work exceedingly well; warm friendships have sprung up and lasted many a year, and those who, as lads together, have emulated each other, and encouraged each other in their old social gatherings, have persevered in the same good course when the arena has been wider and more public.

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